amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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FEATURED IN THIS ISSUE:

- ★ HOMEBREWER'S LINEAR AMPLIFIER
- ★ A BEGINNER'S GUIDE TO RTTY
- ★ SOME THOUGHTS ABOUT TOWERS
- ★ 1981 FEDERAL CONVENTION

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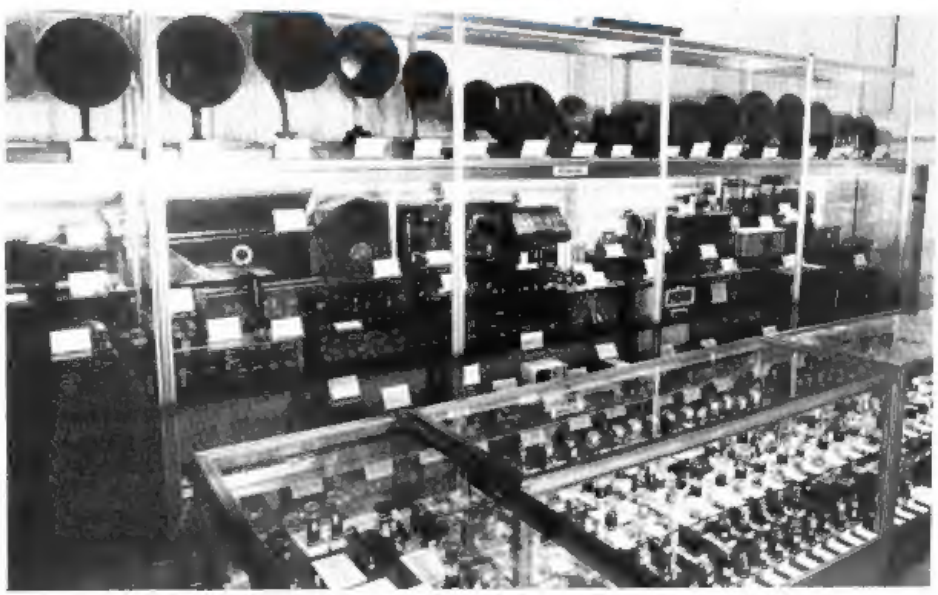

Part of a collection of early radio speakers, domestic receivers and tubes in the Telecommunications Museum, Adelaide. The museum will be featured in AR soon.

QSP QSP QSP

AMATEUR RADIO IN THE EIGHTIES

It is an appropriate time to look back at the last decade and try to apply its lessons to the future. Amateur Radio in Australia experienced and survived two significant influences during the Seventies.

FIRSTLY — a doubling in the number of licensed amateur radio operators. This was a direct result of the "CB Boom" when a large number of CB operators found they wanted to do more than use a microphone. The Service has benefited greatly from this injection of new blood although this increase in numbers led to the crowding of some bands as well as over-taxing club training programmes and facilities.

SECONDLY — The World Administrative Radio Conference held in Geneva in 1979 (WARC 79) was the culmination of over ten years of preparation and activity by the Service. This WARC was very significant in that it examined and re-appraised the existing use of all radio frequencies, including those allocated to the Amateur Radio Service. The Amateur Service's preparation was effective in virtually all frequency allocations being retained and access was given to several new bands. Equally importantly, the Service was retained in its current form and its "raison d'etre" was accepted by a majority of countries — East, West and Third World. It is now up to us to live up to their expectations and justify our privileges.

Post-WARC activities have included the negotiations involved in the preparation of the Australian Table of Frequency Allocations. This is in the course of finalisation and should contain additional privileges negotiated by the WIA.

As individual amateur radio operators, we owe a debt of gratitude to the WARC amateur delegates and to our WIA Executive for the capable representation of our cause. Both these influences, the increase in numbers and WARC 79 have set the scene for the decade that we have just entered. The gains of the seventies must be consolidated and plans made for the future. What must be done?

As you will read elsewhere, the 1981 Federal Convention adopted six long-term objectives in the Regulatory, Technical, Public Relations, Educational, International and Member Service areas, as outlined in March 1981 AR. Examination of these objectives will then lead to the formulation of short and long term plans for the direction of WIA activities. State Councils will be following up these initiatives by implementing their own programmes.

All clubs and individual members should likewise examine their own activities. Over to you as a WIA member, club member and as an individual amateur to see what you can do to ensure the continuing progress of our hobby.

D. LAURIE VK4DT
President, WIA Queensland Division ■

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WIA NEWS

1981 CONVENTION

Further details, including the Executive Report and accounts for 1980 are printed in this issue. The text of a letter sent to the Minister also appears.

Although the RD Contest last year was again won by VK5 nevertheless a formal presentation was made during the Convention by Mr. Ross Ramsay.

AX PREFIX

The Executive at the May meeting decided that the use of the AX prefix be sought for the 1988 Bicentenary and the 1985 WIA 75th Anniversary. After much thought it was agreed to support the VK4 Division's request for AX to be used Australia-wide next year to mark the occasion of the Commonwealth Games. No other suggestions for the use of AX could be supported except that perhaps some consideration might be given to seek it for Australia Day (and perhaps a day either side) each year.

EXECUTIVE SUB-COMMITTEES

These were appointed and will appear in the Federal Directory. The only changes were that Mrs. Brenda Edmunds VK3KT comes in as Federal Education Co-ordinator, Reg Dwyer VK1BR takes over as Federal Contest Manager from 1st June, and Mr. Bill Rice VK3ABP heads up the newly-constituted Federal Technical Advisory Committee.

CUSTOMS

A new By-Law 8151108 applicable 12/5/1981 covers the admission of 430-440 MHz amateur transceivers.

LICENCE FORM

It is understood from DOC central office that supplies of full and limited licence forms are running low and a reprint is required. A revision of proposed forms has been submitted for comment by the Institute.

MISCELLANEOUS

The proposed Sydney to Rio Yacht Race scheduled for next year mentioned in the QSP on page 39 of February AR appears to be on. The Manly Warringah and Hornsby Amateur Radio Clubs have undertaken the arrangements for amateur communications for this race.

Dr. D. A. Wardlaw VK3ADW and Mr. M. J. Owen VK3KI accepted invitations to attend the NZART annual Conference this year.

Intruder Watch activities are noted to have increased as a result of the "Woodpecker" reports in May AR, and DOC now requires quite specific details on this source of interference (refer IW Co-ordinator for further information).

1981 CALL BOOK

Last, but not least, work on the 1981 Call book is proceeding well, including a wealth of reference material.

Response is still awaited for details from many Clubs.

Holders of new calls, new licences and changes of address may still have time to get into the Call Book if details are sent in at once. ■

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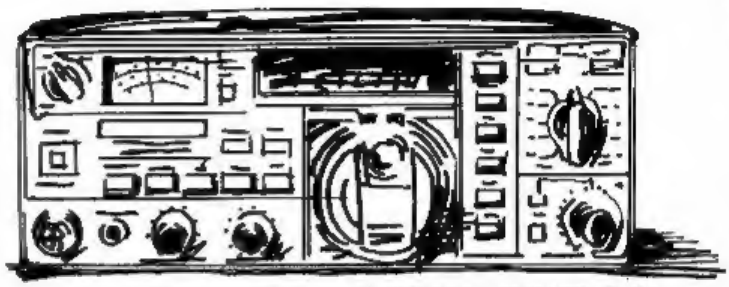

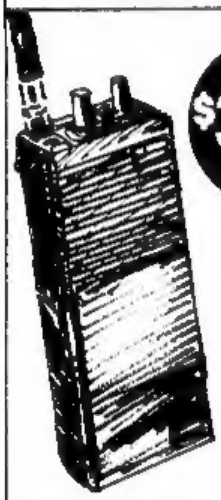

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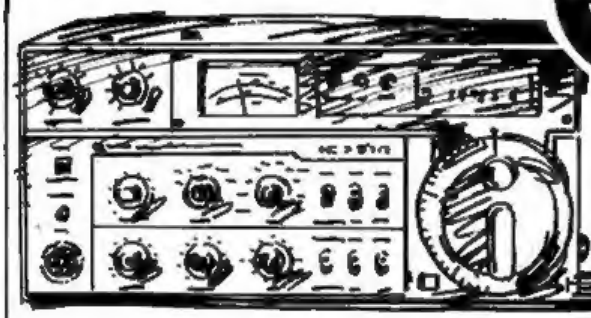

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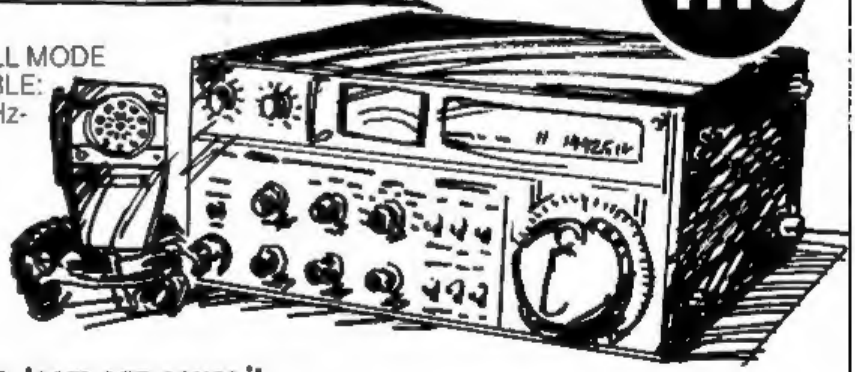

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Letter to the Minister

The following is a letter despatched by the Institute to the Minister for Communications. The protocols referred to are No. 45 and 49 as follows:—

"No. 45

FOR THE FEDERAL REPUBLIC OF GERMANY, DENMARK, GREECE, NORWAY, SWEDEN AND THE CONFEDERATION OF SWITZERLAND:

In signing the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service (Geneva, 1978), the delegations mentioned above wish to state the following:

Commencing in 1975, very powerful pulse transmissions from HF stations operating within the territory of the USSR have been causing continued harmful interference over large areas on frequencies in the HF bands, including those allocated to the Aeronautical Mobile (R) Service, and will, if not terminated, be liable to cause harmful interference on frequencies in the new Plan.

The above delegations refer to Article 35 in the Convention and to Resolution No. Aer 2 of the Radio Regulations, and express their great concern about this prolonged violation of the said provisions.

Their Administrations reserve the right to take appropriate measures to protect the Aeronautical Mobile (R) Service, and other radio services, if this harmful interference continues."

"No. 49

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:

In connection with the statement made by the delegates of the Federal Republic of Germany, Denmark, Greece, Norway, Sweden and Switzerland and contained in Final Protocol No. 45, the delegation of the USSR wishes to make the following statement:

In the Soviet Union the research on radio-wave propagation is being conducted by using the radio installations in the HF range and it might perhaps (according to the statements of Administrations of certain States) cause some short-term interference to individual services. Similar signals have been recorded in the Soviet Union by the receiving apparatus and monitoring service from the operation of installations of other countries.

With a view to reducing possible interference with the Aeronautical and Maritime Mobile Services operating in the HF range from the above-mentioned research operation conducted in the Soviet Union, a number of technical and organizational measures have been taken.

At present radio monitoring services confirm the efficiency of the measures taken.

In carrying out these studies, the Administration of the Soviet Union takes due account of the provisions of the International Telecommunication Convention and the Radio Regulations."

"As you are aware, attention has recently been focused on the interference caused to Australian stations by the so-called "Russian Woodpecker". The Wireless Institute of Australia believes that these complaints are justified but, in fact, raise a much broader issue.

As you are aware, Australia is a party to the International Telecommunications Union Convention, which incorporates the Radio Regulations. As you know, these Radio Regulations include a table of internationally agreed frequencies, allocating bands of frequencies to particular Services either on an exclusive, shared or other basis. In addition, these Radio Regulations make provision for the control of harmful interference.

As your officers have no doubt advised you, these provisions relate to harmful interference across national boundaries — a transmitter may operate on any frequency so long as it does not cause harmful interference to the stations of another administration operating in accordance with the Radio Regulations.

The Radio Regulations recognise "administrations" (not individuals) and therefore it is necessary for an administration to complain of harmful interference caused to stations in its territory. If it does not, the administration having jurisdiction over the interfering station would be justified in believing that its station was not acting in breach of the Radio Regulations.

As you know, these Radio Regulations, which Australia has accepted, have the force of a treaty between nations.

The Wireless Institute of Australia has tried to work within this international framework, establishing an "Intruder Watch Service" to provide your Department, as the "Australian administration" with precise and documented reports of harmful interference suffered by Australian Amateur stations.

The Soviet Union's over the horizon radar system is only one of many sources of harmful interference noted on exclusive Amateur bands. Of course, the USSR station is significant only under certain conditions, that is, when propagation conditions and its operating band of frequencies coincide with Amateur bands.

But that is to put the matter in a very narrow compass and in a frankly selfish context. I am sure that your officers have drawn your attention to the final protocols of the Aeronautical (R) World Administrative Radio Conference held in Geneva in February of 1978 (enclosed). A number of administrations then recorded their complaints against the Soviet station. It is interesting to read the USSR response.

I have been told that you have taken the view, in reply to certain complaints, that the "Russian Woodpecker" is a defence matter and that in any event, insofar as the Amateur Service is concerned, Amateur stations are frequency agile.

With the greatest respect the Institute suggests that this is to rather miss the point.

The "Woodpecker", under good propagation conditions, is not only exremely strong but also, because of the pulsed nature of its transmissions, spreads a strong interfering signal over a wide band of frequencies. As a result, although the stations of the Amateur Service are frequently agile, they cannot avoid the interfering signal by moving in the confines of the Amateur band in question. It could be suggested that the Amateur operators concerned could move to another Amateur band to avoid the interference. It is negated, however, by the fact that the "Woodpecker" usually operates on the band with the best propagation conditions and therefore the optimum band available to the Amateur Service at that time for international communications. The net result is that the "Woodpecker" frequently renders useless the optimum band and sometimes the only band available for long distance communications at the time. This interference is therefore "harmful" to the Amateur Service to the extent that it makes the desired communication impossible.

Other nations, including Australia, may also be developing similar systems. The fact is, these other systems do not cause significant interference.

Amateur stations are frequency agile — but the Service is perfectly entitled to seek protection from harmful interference in its exclusive bands. That is what the Radio Regulations are all about. If, on the other hand, my understanding of the international arrangements to which I have referred is inaccurate, I would appreciate an explanation of those arrangements that I can place before our membership.

You may have been surprised at the "Woodpecker campaign". We feel it has partly arisen from a sense of frustration. The Institute's Intruder Watch has reported observations of many stations in many countries causing interference to stations operating in accordance with the internationally agreed Frequency Table. Unfortunately, we have little evidence of positive action by your Department in response to these reports. Perhaps that is being less than fair, and we would certainly welcome your assurance that the Department has, and will continue to, take action on an inter-administration basis in respect of such complaints.

I believe that such an assurance in respect of all stations causing harmful interference, whether the "Russian Woodpecker" or any other station, would be most welcome and would meet the legitimate concern of many Australian radio operators. More particularly, can the Australian administration be seen to be taking action in respect of the most harmful of all interference suffered by Amateur and other services, namely the USSR station?

I can assure you that the Institute is, and will continue to be, most willing to co-operate with your Department in this area." ■

(Sgd.) P. A. WOLFENDEN VK3KAU,
Federal President

A Beginner's Guide to RTTY

Compiled from various articles, in particular CQ magazine and ETI, by the Editor, Bruce Bathols VK3UV, 6 Ann Court, Aspendale, Vic. 3195.

Radio Teletype (RTTY) is one of those quickly growing "sepcialised" forms of amateur communications. The attraction to its devotees is probably a mixture of the magic of modern digital communications coupled with the convenience of written rather than coded or voice communications. In autostart nets, it's not even necessary to be home when receiving a RTTY message — the printer or display will record the text for you to read at your convenience. RTTY is very popular among "rag-chewers" and "engineers" alike; in fact, you get to do a bit of both. The rapid growth of digital electronics has carried over to both RTTY and the new home computer hobby. If your "bag" is chasing DX, what could be more satisfying than a DXCC certificate for all RTTY? There are several DX RTTY contests sponsored every year with heavy participation. So, rather than ask "Why?" ask "How?"

WHAT DO YOU NEED TO WORK RTTY?
An amateur RTTY station needs a transmitter, receiver and antenna just like any RF communications system, in addition to some "special boxes" to make the RTTY part work. Some considerations for the equipment are outlined below.

1. RECEIVER-TRANSMITTER

The RTTY receiver and transmitter (or transceiver) should be stable, well calibrated and capable of *EXTENDED TRANSMITTER OPERATION*. When you are transmitting RTTY, the full carrier is on for longer periods of time than for CW or SSB voice. So check your manual and manufacturer for RTTY specifications and, if in doubt, reduce transmitter power somewhat. For HF work, a good SSB rig in LSB mode works well with RTTY tones (more on tones later). Most VHF-FM transmitters work with RTTY, but avoid overloading the transmitter as mentioned above.

2. ANTENNA

A good antenna will buy you the same benefits in RTTY as it does in other modes. One caution though, the traps on some antennas may not handle as much power in continuous RTTY operation as they do for CW or SSB voice. This can especially be true of trap yagi antennas for the HF bands.

3. RTTY DEMODULATOR

The demodulator connects to the receiver audio output and converts the RTTY tones to keying pulses. The quality of your printed signal is determined more by demodulator performance than by any other portion of the system. Demodulators come in all shapes, sizes and prices.

4. TONE KEYER

The tone keyer circuitry converts the keying pulses from your keyboard into audio tones to drive the transmitter. Since this circuitry is closely related to that of the demodulator, it is usually constructed in the same cabinet.

5. TERMINAL

The terminal is the device that prints or displays the received signals while allowing you to type your transmitted message. The terminal is sometimes divided into a keyboard and a printer or display section. The terminal can be as simple as an old surplus TTY machine or as exotic as a microprocessor controlled terminal.

HOOKING IT TOGETHER (see FIG. 1)
Probably the most frightening thing to the RTTY beginner is the thought of all those wires that must be connected to make it work. A particularly complicated RTTY station can have a real "rats-nest" of wires, but it didn't start that way. Make connections in a logical and step-by-step manner and all will work well. All transceivers are slightly different, but in general you will have to make these connections:

1. GROUNDING

Before making any other connections, decide approximately where your equipment will be located and run short, low-inductance ground wires (shield braid recommended) between the cabinet grounds of all equipment AND MACHINES. Do not defeat the AC safety ground on the power cords; run separate RF grounds in addition to the AC safety ground. *LACK OF ADEQUATE RF AND SAFETY GROUNDS CAUSES MORE PROBLEMS IN RTTY INSTALLATION THAN ANY OTHER SOURCE.*

2. RECEIVER TO DEMODULATOR

Use shielded cable to connect a 500 ohm audio output of the receiver to the demodulator audio input jack. If you do not have a 500 ohm output, the 4-8 ohm speaker output will work, but not as well; a speaker to 500 ohm line transformer would be a good part to add when possible.

3. TONE KEYER TO TRANSMITTER

Use shielded cable to connect the tone keyer output of the demodulator to the transmitter audio input. Often a rear-panel "phone-patch" or "auxiliary" input is provided. If not, connect directly to the microphone connector.

4. DEMODULATOR TO TERMINAL

Use shielded cable to connect the terminal to the demodulator. Use the current loop connection for each. When con-

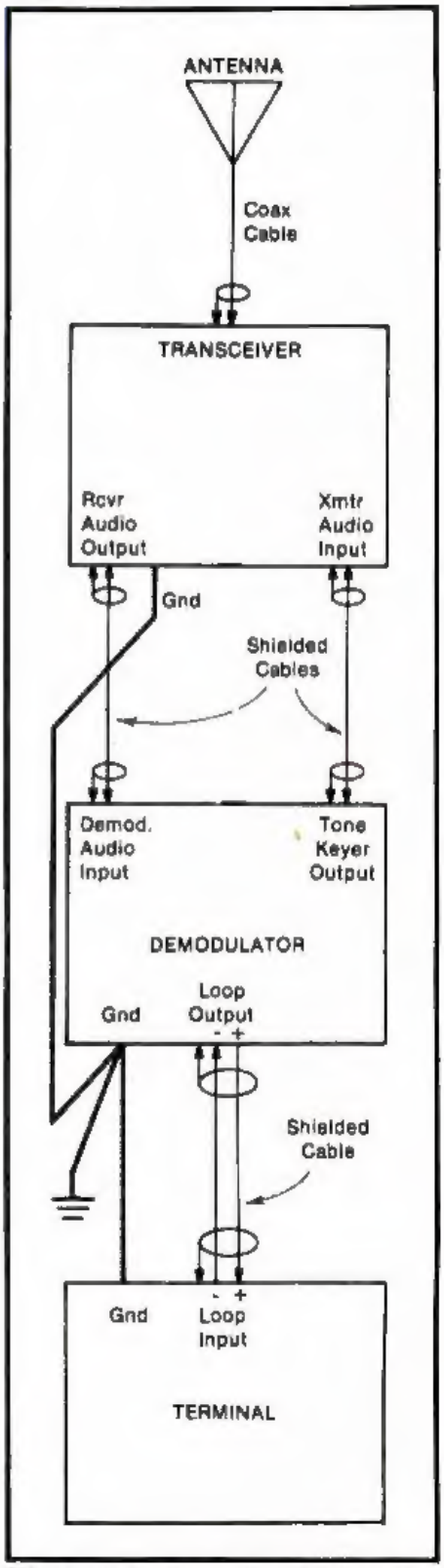


FIG. 1: Basic layout of a RTTY station.

necting to a solid-state terminal, be sure to observe the proper polarity as indicated in the operator's manuals. Be extremely careful when wiring the loop circuit — potentially lethal voltages are present when the equipment is turned on (200V DC at 60 mA). Also, be sure that no part of the loop circuit is connected to chassis ground in machines or other equipment. All RTTY equipment is connected in series when the current loop output is used.

5. CONTROL CIRCUITS

Since the control requirements differ with manufacturer, study your transceiver manual carefully to determine how to control the transmit-receive function. Usually you can control the push-to-talk (PTT) line through a pin on the microphone connector, a front-panel switch, or a rear panel accessory connector. Initially, try to manually switch between transmit and receive until you are familiar with RTTY operation. "VOX" operation through the microphone socket is possible with transceivers that have the facility when using the "AFSK" keying method. This will alleviate the necessity to manually switch the Tx on, making a very convenient operation.

WHAT IS THIS MARK AND SPACE BUSINESS?

The RTTY signal from the terminal is a series of pulses. The amateur BAUDOT RTTY signal has 7 possible pulses for each character typed or printed, each transmitted one-after-another (serial). Each pulse can be either "ON" (current flow in the RTTY loop) which is called "MARK" or "OFF" (no current flow), the "SPACE" condition. To keep decoders synchronized, the first pulse of a character, the START pulse, is always a SPACE (current off); the last pulse, the STOP pulse, is always a MARK (current on). The 2nd through the 6th pulse can be either MARK or SPACE, depending upon the coding required for a character. The START and all 5 data pulses are the same length; the STOP pulse may be either equal to or longer than the others. The so-called computer ASCII (American Standard Code for Information Interchange) code uses START and STOP pulses but has eight instead of five intermediate data pulses, thus allowing a greater number of characters to be encoded. Although all machines and electronic terminals use pulses, the MARK and SPACE pulse conditions are converted into MARK and SPACE audio tones for easy radio transmission.

THE DIFFERENCE BETWEEN FSK AND AFSK

Transmitting RTTY signals via radio could be done like morse code with on-off keying of the transmitter carrier. However, the interference received during off-times would give badly distorted printout. Rather, HF RTTY is transmitted with Frequency Shift Keying (FSK) so that the mark pulse conditions corresponds to one radio frequency and the space to another. Amateur radio convention has it that the mark radio frequency is higher than space and that the separation or "shift" of the signal is standardized at 170 Hz or 850 Hz. (425 Hz shift is also used by commercial RTTY stations.) Most present-day amateur RTTY stataions use 170 Hz shift exclusively. The FSK signal is received with the BFO turned on, giving two audio frequency tones for the mark and space conditions. The audio tones are, in turn, detected in the demodulator and the resulting pulse drive the display or printer. Note that changing the transmitter or receiver frequency (on purpose or through frequency drift) will change the audio output frequency to the demodulator. The HF system is therefore quite drift sensitive. Present HF equipment frequency stabilities are quite adequate for FSK RTTY, but it is only very recently that VHF equipment was available with similar stability. Therefore, VHF RTTY has traditionally been transmitted by first keying audio tones with the RTTY pulses and then using these tones as the audio modulation of an AM or FM VHF transmitter. This is called AFSK for Audio Frequency Shift Keying. Current amateur convention is to make the mark audio frequency lower than the space frequency by the amount of the shift. Since the RTTY data is audio modulation of the carrier, frequency drift of either transmitter or receiver is a lot less critical. The audio frequency of the tones transmitted is set to be the same as those in the receive demodulator.

The required radio frequency shift keying can be done in two different ways: shift the frequency of a transmitter oscillator directly with the RTTY pulses or use a SSB transmitter with audio tones. Direct FSK keying circuits are described in most amateur journals and are generally simple, but require modification of the equipment, generation of FSK with a SSB transmitter is as follows: If a Lower Sideband Transmitter (LSB) is driven with a 2125 Hz audio tone, the RF output of the transmitter will be at a frequency 2125 Hz *BELOW* the suppressed carrier frequency. A properly adjusted LSB transmitter will have *NO OTHER* output frequencies. If the input tone is changed to 2295 Hz (170 Hz shift), the RF frequency is now 2295 Hz BELOW the carrier frequency. Thus, audio tones into the LSB transmitter have produced FSK carriers out of the transmitter. Note that, because the LSB mode was used, the 2125 Hz standard mark tone for VHF AFSK has become the higher radio frequency. Thus, the same demodulator and tone keyer can be used for both VHF AFSK and HF FSK operation. Often, this use of audio tones with a SSB transmitter is mistakenly called "HF AFSK" — actually the resulting output is true FSK, IF the SSB transmitter has no spurious outputs (such as carrier or unwanted side-band). Most HF RTTY amateur radio stations use audio tones with a SSB transmitter. Although "standard" audio tones for VHF amateur operation have long been 2125 Hz for mark and 2975 Hz for space (850 Hz shift), limited audio frequency response of HF SSB transmitters and receivers has recently given rise to a second set of "standard" tones at lower frequencies ("Low-tones").

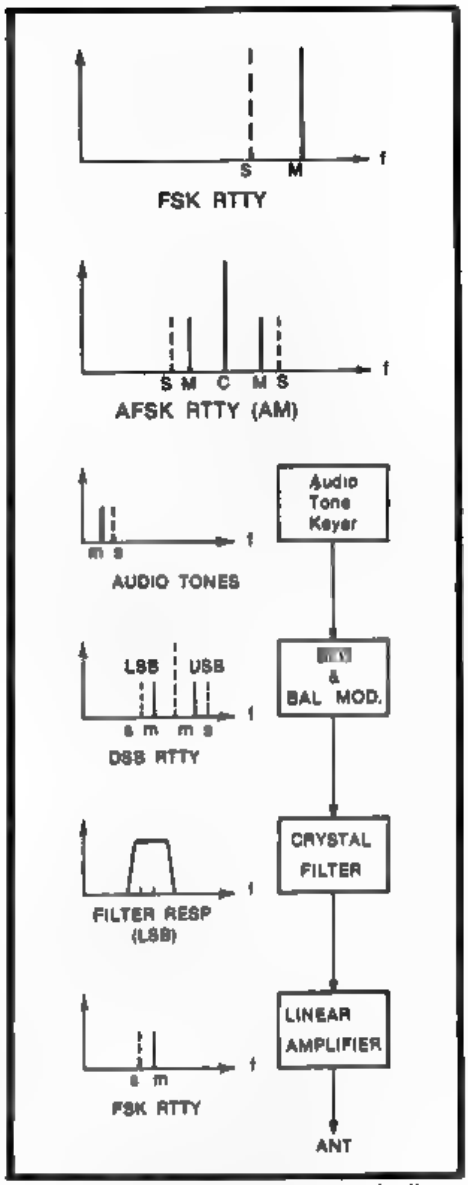


FIG. 2: "FSK and AFSK operation".

HIGH TONES vs LOW TONES

Historically, demodulator tones were set to 2125 Hz for mark and 2975 Hz for space reception of 850 Hz shift. When transmitter stability improved, 170 Hz shift was used and the space frequency changed to 2295 Hz (mark remained at 2125 Hz). These three tones were, and still are, a standard for US Amateur RTTY. However, in the early 1960s, virtually all commercially available transmitters and receivers became filter-type SSB equipment with audio pass-band limited to speech frequencies, sometimes as narrow as 2.1 kHz (300 to 2400 Hz). Obviously, the 2975 Hz (850 Hz shift Space) tone will not pass through such a filter and 850 Hz shift with these tones is not possible (although the 170 Hz shift is). Therefore, either the SSB equipment must be modified or different, lower-frequency tones must be used if 850 Hz RTTY shift is desired. Both approaches have their advantages and both are currently in use. The so-called "LOW-TONE" standard sets mark at 1275 Hz and space at 1475 Hz

(170 Hz shift) or 2125 Hz (850 Hz shift), conforming to the European IARU standard. So there are now two sets of "standard" tones, LOW and HIGH (as well as a myriad of others), all of which work INTERCHANGEABLY on HF RTTY. However, since the actual audio tone is transmitted for VHF AFSK operation, the two sets are *NOT COMPATIBLE IN VHF AFSK* applications. Current Australian and US Amateur operation uses the HIGH TONES for VHF. Thus, to use a demodulator and keyer for both HF and VHF operation, it should be set up for HIGH-TONE operation. Conversely, you may wish to have separate stations for HF and VHF, simplifying the cabling, and providing simultaneous monitor/operation capability as well as resolving the tone problem.

FREQUENCIES FOR RTTY

HF RTTY operation has evolved to heavy operation on the 80 and 20 metre bands (CW segments) with sporadic operation on other HF bands. 80 metre RTTY stations tend to operate between 3600 and 3650 kHz and 20 metre stations between 14 075 and 14 100 MHz. Popular HF "net" frequencies used in Australia are 3545 kHz, 7045 kHz, 14090 kHz, 21090 kHz, 28090 and 28320 kHz. 170 Hz shift is used almost exclusively with mark being the higher radio frequency. 60 w.p.m. (45 baud) is the most popular RTTY speed, but 100 w.p.m. (74 baud) is gaining in popularity.

VHF RTTY operation in most areas is concentrated on 2 metre FM with 146 600 MHz being the popular operating frequency. Virtually all stations are now using the 'High-tones' usually with 170 Hz shift. As with HF RTTY, 60 w.p.m. (45 baud) is most popular on VHF. RTTY repeaters are planned soon for some Australian States.

WHO DO I TALK TO ON RTTY?

RTTY enthusiasts run the full range of ages and interests, but tend to be technically inclined. The typical RTTYer is always modifying his station, likes to talk, and usually has more ideas than you have printer paper (or display screen). Some operators are good typists, most aren't. Recently, the home computer hobby has become quite popular with RTTY people and you may find a lot of help in debugging your programmes if that's your interest. There are an increasing number of DX stations on RTTY.

HOW MUCH DOES IT COST?

RTTY is like any other hobby — it can cost as much or as little as you want it to. If you buy used machines and build kits or your own designs, the total RTTY cost can be quite low.

1. DEMODULATOR

Assuming you already have a good transceiver and antenna, your first major RTTY purchase should be a good demodulator.

2. TERMINAL

You can spend very little or a lot on the terminal. A surplus machine can often be acquired at a hamfest for little cash investment. However, by the time you figure out how it works, fix it, and buy parts and manuals the total cost may not be so low. If you do, you'd better be prepared with tools, oil, and patience. Newer machines require less work, but also cost more. ■

* * *

THE AUSTRALIAN SCENE AND WHERE TO START

For the raw beginner in RTTY there are several good publications available which are a must for your library.

Two which the author found particularly useful are "RTTY from A-Z" and "The New RTTY Handbook". Both are published by the CQ technical series, and although similar in basic contents, are sufficiently different in many aspects to warrant the purchase of both.

These two books are available from Magpubs (PO Box 150, Toorak, Vic. 3142) at modest cost (around $13 for the two).

Also worth looking at is the RSGB and ARRL RTTY Handbooks, they should be available in most technical book shops. They are on order also via Magpubs, but at the time of publication had not been received.

THE MODULATOR/DEMODULATOR

Many articles have been published over the years but one of the best I have seen lately is a series which appeared in Electronics Today International (ETI) for August, September and October 1979.

These articles describe a fully solid state active filter design mod/demod and also gives some in-depth "debugging" of the Teletype Model 15 Printer. PCB layouts and artwork is included and it makes a very interesting project. The PCBs are available commercially, and also a kit can be obtained from "Electronic Components and Kit Sets", 118 Lonsdale Street, Melbourne. The cost is around $50 for both boards and components from the above supplier, but I suggest you check with them first for latest availability and cost.

THE TELEPRINTER

The most common printers available locally are the Teletype Models 14 and 15, although the Creed Model 7s are around, they are usually in need of some repair and parts for all machines are difficult to obtain.

I spotted a supply of Model 15s recently (February 1981) in Melbourne at the "Aussi Disposals" network of shops. To my knowledge they had about 20 or so at $50 each.

It may take some soul searching to locate a good one, but once obtained they will last almost forever. They are a very rugged piece of machinery.

Keep on eye on "Hamads" too.

The Siemens Models 100 are starting to appear at various odd places, keep an eye on your local "Disposals" shop. They are not cheap, around $250-$300, but if you can get one it is really the ultimate and worth every cent.

RADIOTELETYPE GROUP

In Australia we have a group based in Sydney called The Australian National Amateur Radio Teletype Society (ANARTS) contact may be made C/- Peter Mulligan, 52 Haughton Street, Yagoona 2199 NSW. Phone (02) 709 6060 AH or (02) 519 5855 Bus.

The group can supply information and teleprinter machines, where to obtain them, how to service them, etc., as well as supply a number of kits for RTTY applications.

AN APPEAL FOR HELP

On the HF bands, particularly 3.5, 7.0 and 14.0 MHz RTTY frequencies, many amateurs mistake a genuine amateur RTTY QSO for an intruder. Please do not deliberately QRM an amateur RTTY station, they are more prolific now and can be easily identified by the operator's CW ident every 10 minutes.

QRM from SSB and CW operators only causes friction among the amateur fraternity. Rest assured that if an RTTY intruder comes up on any part of the amateur bands, he can be quickly monitored by amateur RTTY enthusiasts and the appropriate action taken.

RTTY is an exciting part of amateur radio, I hope we may "see" you down on this mode too. ■

Some Thoughts about Towers

With acknowledgement to Henry ZS6SR, Radio ZS, Dec. 1980

Towers are no more or less than the supports for antenna systems. The type of tower to be erected depends firstly on the antenna which it is desired it should carry. Consider the following questions:—

Is constant good communication over a long period, across all bands, desired, OR will occasional contact when conditions are good suffice? Depending on location, propagation from the QTH may be good, fair or bad. That extra height may make all the difference.

What equipment is available and what is envisaged? Low power equipment and good antennas can get out equally as well as high power fed to mediocre radiators. If QRP operation is envisaged, the antenna system could possibly finally be more elaborate. A stronger tower could be required.

What frequencies are Preferred Multiples of wavelengths which will give an indication of the minimum height that the antenna should be above ground? A 5/8 to ½ wavelength of 20m will suffice for 2m, 10m, 15m and 20m and this tower need only be 12.5m high. This is however not high enough for 40m or 80m operation.

Will DXing be the major prefernece? The higher the radiator above the counterpoise the lower the angle of radiation and the more desirable for long distance. If the beam extends over a roof is operation may be affected depending on the type of roof. If it is a tin roof then the effective height over the roof will be that above the roof while for the portion not above the roof the effective height will be from ground level. If the roof is not tin then in dry conditions the ground level would be the counterpoise whereas in wet weather the counterpoise would rise to roof level. A high angle of radiation may be present in certain directors thus affecting DX to some areas. Having decided on what strength and height the tower should be, consideration should be given as to what type of tower is desirable.

Among others the following can be considered:

- Rotatable Towers.
- Fixed Towers.
- Telescopic Towers that could be motorised.
- Tilting Towers.
- Self-Supporting Towers.
- Guyed Towers.
- Permanent Fixed Towers.
- Towers that can be moved at a later date.
- Climbable Towers.

Decisions as to what type of tower to acquire depends on a number of factors, but before these are considered, your own ability will dictate whether you will —

- Design your own tower.
- Develop your design or copy someone's.
- Build the tower yourself.
- Buy a tower.

Two considerations which are related are:—

- Cost, especially to those of us with limited budgets which we would like to use for equipment.
- Real estate (space) available.

Of prime importance:—

- Safety is of prime importance and must be considered.

FINALLY one must consider:—

- THE LAW.

Stay within the law and the municipal regulations. Keep on the right side of the authorities. If a neighbour experiences TVI or BCI, possibly not caused by yourself, he will point to your tower and if you have antagonised the authorities, it is your tower that will have to come down. Plans should be submitted to local authorities well in advance of desired erection date.

CONSTRUCTION of the tower once again depends on a number of factors.

WHAT DESIGN IS BEST

Single pipe masts are acceptable but tend to be very heavy. Pipe outside diameter and wall thickness must be commensurate with the strain to be withstood. In most cases the weight becomes unmanageable and latticed construction, being much lighter, is desirable.

Plans are not readily available. Some engineers are prepared to draw plans for a fee. The alternative is to copy a friend's tower which has caught your fancy. Work will always have to be done on the antennas on top of the tower. Access to this area must be considered seriously. A telescopic tower is highly desirable, but a tilting tower is a good alternative.

WILL IT BE WELDED OR BOLTED

Welding is preferred to bolting. In any tower there is a certain amount of vibration: the guys vibrate, the beam vibrates, the tower itself picks up vibrations. Bolts are prone to loosen with vibration over a period and this can be a major problem. Drilling of holes is also time consuming and not easy.

WHAT MATERIAL SECTION TO USE

Probably 90 per cent of antenna towers, as opposed to pylons, are tubular legged with solid bar (round bar reinforcing) bracing, both horizontal and diagonal. Angle section is the obvious alternative.

WHAT MATERIALS TO USE

This depends on the skills available. Mild steel welding is easier than aluminium welding which needs special skill and equipment. Aluminium must also be of thicker section though its total mass will be lighter. It is also more expensive. Corrosion resistance of aluminium unless anodized is inferior to galvanized steel.

WHAT WEIGHT (STRENGTH OF) MATERIAL TO USE

The strength of the material to be used depends on the vertical pressure exerted on the legs and especially on the lower portion of the legs.

The physical mass of the tower is only a part of this pressure.

The guys exert downward pull even when not strained taut. This increases as the guys are pulled tighter. Wind resistance in a horizontal plane exert a vertical force on the legs because it tends to tighten the guys.

This wind loading is about 120 kg mass for every 1m² (25 lbs. for every sq. ft.) of material facing the wind in a 36m per sec. (80 miles per hour) gale. This area can be calculated by establishing the total surface area of the legs and bracing, horizontal and diagonal, which faces the outside of the tower on the largest face (the surface area which you will see if you look at the members of one face) and multiply by 1.5.

When considering material, bear in mind the ultimate antenna which you would probably expect the tower to carry in future, and also the height that will ultimately be required. A base half of a 36m tower will carry any antenna at a height of 15m and can be extended later but the base portion of a 15m tower cannot be utilised to carry an additional 21m if subsequently a 36m tower is required. If one follows manufacturers' instructions and mounts a 10, 15 and 20m tribband at 15m it may be found that under certain conditions 18 to 20m is necessary for satisfactory operation. A telescopic tower would probably be required and the higher it can go the better.

A tower built with material strong enough to carry a light 10, 15 and 20m beam with a small rotator will not carry a 40 and 80m beam in addition to the heavy rotator required when you wish to add this in five years time. The tower should have been built strong enough to carry the ultimate and would have been adequate for the lightest beam in the interim.

WHAT CORROSION PROTECTION SHOULD BE APPLIED

Corrosion resistance of aluminium is not as good as galvanized steel unless it is anodized. Anodizing is more vulnerable to scratching than galvanizing, and it is here that corrosion takes a hold. Galvanizing is also preferable to painting. Painting tends to hide corrosion and this can lead to nasty accidents. Hot dip galvanizing is preferable and the completed job must be well inspected for flaws in the coating.

WHERE SHOULD THE TOWER BE SITED

A number of considerations should be made before the final site is established. The antenna should not overhang neighbours' property at any stage. A property owner owns the space above his ground

The tower should be as close to the shack as possible to avoid power loss in long feedlines. Open feeding impedance can be affected by the metal of the tower and coax should be used on the tower.

In respect of tilting towers, fruit trees should be pruned to allow the tower to be lowered without damage to the tree.

WHAT FOUNDATION IS NECESSARY

Self-supporting towers adequate foundation is essentia As a rule of thumb a concrete cube measuring 6.5 to 10 per cent of the tower's height should be provided, e.g. 10m tower — hole 1m x 1m x 1m filled with concrete, 30m tower — hole 2m x 2 m x 2m filled with concrete.

The base section of the tower must be wel embedded in the concrete and some vert cal reinforcing in the concrete cube is desirable.

WHEN SHOULD THE TOWER BE ERECTED

Choose days when the weather is favourab e for working on the tower Avoid working n changeab e conditions.

WHAT ABOUT GUY WIRES

Guys should be anchored to sturdy poles driven into the ground or to concrete blocks buried in the ground.

Metal guys can affect radiation. If steel guys are used they should be cut to non-resonant lengths. Synthetic rope guys are preferable.

Guys should not be too tight. The tower should be able to sway to avoid unnecessary strain.

HOW TO GET THE BEAM ONTO THE TOWER

Putting the beam onto the tower can be a problem. A reasonably successful way is to build a "tramline". A piec of fairly substantial tubing, 50 mm o.d. and about 2m long is attached at rightangles to the mast at the top of the tower. To the ends of this tube two wires are fixed and pulled taut to anchors so that the wires are parallel and at an angle of about 45° to the vertical. A pulley is attached to the top of the tower through which a rope can be fed to the centre of the beam on the ground. The beam is now pulled up the "tramline" after guide ropes have been attached to each end by which the beam is held square These guide ropes should be attached so that they can be detached by shaking after the beam is in position. The beam must be taken up in an orderly fashion as it can easily get out of hand

WHAT ABOUT LIGHTNING PROTECTION

There is no protection against a direct lightning strike, or heavy side strikes. It is better to lead static and light lightning strikes to earth via the tower than via the antenna and feedline.

The top point of the mast at the top of the tower should be 2 to 3m above the highest antenna. Lightning does not always strike the highest point. It often strikes 1.5 to 2.5m from the top. Always stack beams with the shortest on top to form a "Christmas tree". A 45° cone w il be best protected by the tip of the tower.

The tower should be well earthed The earth lead should be at least 70 mm² in cross section (12 to 15 mm rod) If conductivity of the ground is reasonable — 1 ohm over 4m — then an earth stake should suffice If not a radial system of 3 to 4 radials, each at least as ong as the tower is high should be bur ed about 0.6m underground. If conducting is questionable put salt into the trenches and keep them wet.

CAUTION

Always remove the feedline from the rig after use or when lightning is around. It is safest to "throw the feedline out of the window" Also remove the power plug. If the power lines are struck the surge will jump the switch

DO POWER LINES IN THE VICINITY AFFECT TRANSMISSION

This depends on the distance of the power lines from the antenna Very little reception noise will result if power lines are more than about 75 to 100m away However, if transmission is beamed directly at the power lines there will be absorption and possible peculiar reflection, possible noise and reduced signal. Power lines over about 200m away should have no effect whatsoever. ■

QRI ?

Ralph Williamson VK3BRF

It's not possible for any one person to imagine, and write about, all the varieties and degrees of disability visited on selected members of humanity, so I'll just tell you of my experience. This might give you some small idea of the extent of the difficulties met with, and overcome, by people in worse situations than mine.

My first memory of radio was about 1930 when my father brought home a polished hardwood box about a foot square at the end and about a yard long. With it came a three-tier table, batteries of several shapes and sizes, an elegant horn speaker and a mile of wire. This combination gave out some expensive splutter and squeak but refused to yield the Melbourne Cup description to the neighbours who had gathered from miles around. We found, from "The Weekly Times", that Phar Lap had won the cup. Radio was a failure. I was six.

I vaguely remember, some time later, an army base radio station being unloaded from a convoy of trucks. With it came its mobile sub-stations, each one of them too heavy for one man to handle.

Then, after the war, there was an amateur's station, a masterpiece of construction, smelling of ozone and most impressive were its rows of cabinets and frames full of stacked modules, seen in a mercury vapour glow.

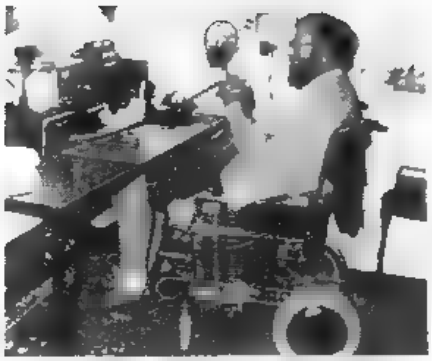
At that time I suffered the disabilities common to most young men, a young and growing family, a humpy for a house and only one foot on the lowest rung of the ladder to fame and fortune.

So for me radio had to wait until I had overcome these troubles, meantime developing others in the form of arthritis, an early retirement and various stages to a wheelchair.

Along this course it occurred to me that I should fit myself with some sedentary hobby against the time when my "get up and go" had gone, so in 1978 I mustered my thirty year old theory, polished it up a bit, took credit for having worked morse code as a postal/clerk/telegraphist and gathered a Novice licence, followed by the AOCP.

I'm currently trying to raise my morse speed to 35 w p m to make sure of the RT High Speed Club's Certificate but I find my reflexes are dead flat and I fear the worst.

It became obvious, to my sorrow, that the day of the home-brewer of major items was over, but as my mobility and dexterity decreased I came to rejoice in the fact and since then I have found great delight in the size, versatility and power of factory built, all band, many mode outfits



My problems are now reduced to those of buying, handling, repairing, operating and supplementing the black box and that of shopping.

Until recently, like most, I have been limited for space, but the loss of a daughter by her marriage has won me a spacious "Radio Room".

On moving in I took the opportunity to increase the knee height under my benches. Knee space which is ample for a person on an ordinary chair is much too low to run under on a wheelchair. By raising the benches I have increased the reaching distance over the bench which is now much too great for anyone who is unable to rise.

This was partly overcome by filling the back of the bench with storage compartments for seldom used test gear, storage drawers for components and the like, and partly by the use of a selection of "shepherds' crooks" made of a length of broom handle, slotted at one end for turning lever handled switches and cup hooked at the other end for dragging things closer. Hooking at component drawers often results in a spill and, in fact, more time is spent on picking up than on any other function. For picking up, the most useful elements are an understanding wife, a scissor type food tongs or a commercially made "Helping Hand", in that order.

To reduce the reach to light switches and power points these were moved to the hither side of the bench which raised the difficulty of having cables all over the work. Any cord of a permanent nature was suspended under the bench in cup hooks, thus reducing the confusion and danger considerably. If many cords are in use, a multiple distribution point is used, fed by a single cord.

Handling the equipment is difficult as even small items are weighty on extended weak arms. Major units are generally placed by someone else but small changes of position are effected by a lever over the edge of the bench and under the unit or by a hefty tug with the shepherd's crook. Here the bearing edge on the shelf often saves a crash. Manoeuvring a set to remove the covers and take out the innards generally falls to others.

Operating most sets, prior to adaptation, has its problems too, as their knobs, especially on multi-position switches, are inadequate. I have used dozens of levered and elephant eared switches. On stiff switches even this is not enough leverage for sore hands so a length of slotted broom handle, to fit on the levered knobs, lives on the operating desk. This gives an extra six inches advantage.

Coax connectors are the very devil and I have a pair of gasfitter's pliers handy.

Push buttons are difficult so I give them a prod with my broom handle — there is also a length of 3/8 in dowel handy for buttons which are too close together. Push to talk levers and send/receive switches are all bypassed to micro switches. This calls for careful placement of the microphone when not in use, otherwise the word could be treated to a vigorous vocal description of the state of the universe.

Where safe and satisfactory, old plugs and sockets are replaced with ¼ in or miniature phone jacks, the plugs being drilled and fitted with a twine loop for tugging on. Although I have a standard morse key (salvaged from a Japanese aircraft) for showing off, most of my morse is made on a mechanical semi-automatic "jigger" made by Ingram of Perth, probably more than sixty years ago. I've just bought a Hi Mound — same thing — as a spare.

Repairing and supplementing the box are my real aims but snipping a piece of wire depends on me being able to squeeze the handles of the cutters between my lower ribs and the arm of the chair, and the baring of a piece of wire almost defies description. Consequently, most of this falls to my No. 2 son, who is a technician, and it gives me great pleasure to see his trained handling of, and almost reflexive conclusions to, test results. My knowledge of this "nowaday" gear is even improving by following him. Aerial work is out of the question but I am still allowed the role of ground supervisor. This is very good for the ego.

Shopping is quite difficult and the art and pleasure of browsing is lost entirely. I have found that most firms will post goods out to a known customer on some prior arrangement.

Too frequently, as everyone knows, some item is not easily available and it is then, with my shopping as with all my other activities, that I must impose upon and rely upon the goodwill of others.

Fortunately, this goodwill is not stinted.

Finally, let me mention that sometimes the holders of Novice and Limited licences feel threatened by efforts to downgrade or drastically alter their licence conditions.

There are those who have obtained their licences under most difficult circumstances, and also who do not obtain results as easily as others. There are those who cannot, or may not, or need not, upgrade. Whether there be good reason or no reason at all for not upgrading, goodwill alone should ensure that no licensee is ever deprived of his/her hard won standing. ■

CW PORTABLE / RTTY / ASCII

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- Noise filter helps prevent garbled display during signal intermission
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- Correction facilities for transmitted messages
- Buffer can be loaded while unit in transmit mode
- CW identification (800 Hz available on RTTY)
- Built-in demodulator for High and Low shifts on 170 Hz, 425Hz, 725Hz all with fine tuning
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- Five memory channels
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FT-290R 2 METER PORTABLE TRANCEIVER

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LCD FREQUENCY DISPLAY
The LCD frequency display allows easier reading of your frequency in daylight and because the LCD display is illuminated by a lamp you can easily read your frequency in dimly lit places

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The FT-290R features a digitally synthesized dual VFC system which may be used for unusual repeater splits during semi-duplex operation A receiver clarifier is also available for fine tuning

MEMORY BACK-UP
A built-in lithium battery cell protects you from losing the memory storage even after as long as five years The need to re-store the memory after long periods of non-use no onger exists
The period of operation has been improved with the installation of 8 C-size dry batteries or NiCd batteries An optional NiCd battery charger is available

OPTIONS
CSC-1 carrying case
NC-11B/C NiCd battery charger
FL-2010 10W linear amplifier

SCANNING MICROPHONE
The standard microphone supplied with your FT-290R includes fingertip up/down scanning controls for easy frequency changes

GENERAL SPECIFICATIONS
Frequency coverage: 144-148 MHz

Modes of operation: USB LSB, CW and FM

Synthesizer steps: SSB/CW 100 Hz, 1 KHz
FM 10 KHz 20 KHz

Power requirements: 8 C-size dry battery cells or
8 C-size NiCd battery cells
External 8 5-15 2 V DC
Memory back-up built-in
lithium battery cell

Current consumption: 70 mA on receive, 800mA on transmit (2 5W RF, FM)

Antenna impedance: 50 ohms

Case size: 58(H) x 150(W) x 195 (D) mm

Weight: 1 3kg without batteries

AR SPECIAL

COMPANY	WIRELESS INSTITUTE OF AUSTRALIA
REGISTERED	17th JANUARY, 1972
NUMBER	919154
OWNERS	SEVEN WIA DIVISIONS
EVENT	ANNUAL FEDERAL CONVENTION
YEAR AND DATE	1981 — 2/3/4 MAY
SERIES	FORTY-FIFTH
VENUE	MELBOURNE
OBJECT	ANNUAL GENERAL MEETING
SCOPE	AMATEUR RADIO SERVICE COMMON SERVICES FINANCIAL AND CORPORATE AFFAIRS REQUIREMENTS
ATTENDEES	CHAIRMAN — FEDERAL PRESIDENT SEVEN FEDERAL COUNCILLORS (THE "FEDERAL COUNCIL") ALTERNATE COUNCILLORS ALL FOUR MEMBERS OF EXECUTIVE (ONE OVERSEAS) FEDERAL SPECIALISTS AND D.O.C. GUESTS
CONSTITUTION CHANGE	EDITOR TO BE APPOINTED HENCEFORWARD BY EXECUTIVE
EXECUTIVE	ALL MEMBERS RE-APPOINTED
ACCOUNTS	ADOPTED
REPORT FOLLOWS	MUCH CONDENSED (SEE ALSO JUNE AR)

A study in concentration and a concentration in study.

Mr Ross Ramsay, accompanied by Mr C W. Pike, attended the Convention dinner on Sunday, 3rd May, as reported in AR June, and addressed the delegates as well as answering questions. Further notes from his address —

Government, he mentioned, had approved the drafting of the new radio Bill which will of course be quite separate from the Broadcasting legislation. What priority this may have in comparison with other Government legislation remains to be seen. Mr Ramsay expected the new 10 MHz band to become available to amateurs on a secondary basis from 1/1/1982. There were, he said, some users of this frequency segment, but not too many. The 18 and 24 MHz bands however posed greater problems and no dates could be given for completion of the transfer of the existing users but he hoped this would be well before the target date of 1989.

On the question of interference being covered in the new radio communications legislation Mr Ramsay pointed out that the Commonwealth has to keep in mind State legislation which also relates to the "inci-

dental" powers set out in the Australian Constitution. He did say that operations in relation to interference complaints cost the Department a great amount of money which he hoped the new Act would address.

THE FUTURE

CONVENTION MATTERS

Two of the major items debated in the Convention related to the possibilities of celebrating the Institute's 75th anniversary in 1985 and planning the future. The 1985 celebrations were examined from two levels. **Outwards** at obtaining wide publicity for amateur radio and **inwards** at events for amateurs. Some matters were seen as essential for early planning; as for example researching the possibilities of producing an Australian amateur history book in relation to costs, volunteers and collection of data, etc. The Executive was instructed to proceed with these overall tasks with assistance from the Divisions. Planning for the future of amateur radio and of the WIA proceeded under the main headings specified by VK4DT in March AR for both the short and long term basis and for completion of detail by both the Divisions and the Executive. The Divisions agreed to report back not later than 30th September this year in relation to the long term aims. If you have any thoughts let your Divisional Council know now.

THIRD PARTY

In regard to Third Party Traffic handling the delegates concluded that the message form for this should follow the general form used by the emergency services. Continuing negotiations were seen as necessary to remove the prohibitions against "phone-patch" traffic. By a majority vote it was considered desirable to approach the Department to allow "autopatch" or repeaters. The Department is also to be approached to allow the transmission of incidental music (on amateur bands) which occurs as an integral part of a radio or television training programme transmitted for the express aim of providing instruction in radio communication techniques. Support was given for an approach to DOC to delete the requirements in Handbook paragraphs 6.20 and 6.21 which require special permission for club stations to operate portable. No support was forthcoming for a proposal to ask for the deletion of Handbook paragraph 6.56 relating to the relaying transmissions.

TECHNICAL

The Federal Council decided —

(a) there was insufficient support to request DOC to extend the 80m band Novice CW segment downwards by 10 kHz,

(b) the status quo of the morse training frequencies should be maintained;

(c) A 6m FM repeater band plan be adopted within the FM section of the band 52.5 to 54.0 MHz,

(d) The 70 cm repeater channel 433.625/ 48.625 be recognised as a nominated WICEN portable repeater channel;

(e) A case be developed for obtaining a Federal Grant-in-Aid.

These Convention items are additional to those reported in June AR.

IARU

IARU was discussed in detail. A policy relating to the proposed amendments to the IARU (HQ) Constitution was adopted mainly along the lines of "cosmetic" rather than drastic changes. A vote of thanks was passed to the Japan Amateur Radio League for producing and circulating the IARU Region 3 News Bulletin.

CONTESTS AND AWARDS

On contests and awards it was agreed to amend the WAVCKA rules to allow Australian contestants to participate. The new rules will be published in due course for comments. These will include certification of log claims or proof in the form of QSL cards at the option of the claimant. A suggestion that an obsolete award (SWL Century Club Award) be discontinued was agreed provided adequate notice is given as perhaps someone may be working for it. The WAVCKA (VHF) Award is hard to obtain and could be regarded as too restricted but will remain on the books. A motion that any changes to the RD Contest rules should revert to the decision of Federal Council was defeated.

MEMBER SERVICES

Suggestions that WIA annual membership cards and a tear-off counterfoil on subscription renewal notices did not find favour mainly in relation to extra costs involved. A year and month coding on AR involved were reasonable. This could help QSL Bureaux if implemented.

Much thought was devoted to recruiting new members as well as the retention of existing members on a continuing basis. It was recognised that the Institute is supported by the members and in turn should not expend unnecessary effort and hard-earned money in providing free services to non-members without some likelihood of mutual advantage.

Various membership matters were discussed, including AR magazine, which did require a much greater input of material from members. Details of possible improvements and courses of action are to be formulated by the Executive's Publications Committee. The affiliation of country-wide amateur societies, e.g. Radio Amateurs Old Timers' Club was supported on a majority vote and the Executive was instructed to re-draft a set of proposed regulations devised two years ago to accommodate current Divisional thinking on such affiliations.

Members desiring further detail should consult their Divisional Federal Councillor. ■

Executive Report 1980/81

It is with pleasure that I present to this Council the Report of the Executive for 1980/81.

The last twelve months have been extremely busy for the Federal administrative arm of our organisation. Not only have we had to contend with the aftermath of WARC 79, but also with a number of important long term issues relating to both amateur radio generally and to the operation of our Institute in particular.

1. MEMBERSHIP

1.1 It is pleasing to report that together with the continued increase in the number of licensed amateurs, so too has our membership grown; 7514 members in 1979 to 7619 members in 1980. Our Institute today is larger than it has ever been.

1.2 The *rate of increase* in Institute membership, however, is presently not as great as the *rate of increase* in new licensees and this is of real concern.

1.3 The true statistical picture is somewhat hazy, as official DOC figures refer to the number of licences issued and not the number of licensees.

1.4 The Institute's records, however, are based on people and therefore the number of licensees who are members.

1.5 In the case of dual licence holders, i.e. limited with novice, DOC records this, rightly so, as two licences; whereas the Institute would record only one member.

1.6 This situation had the potential of making a nonsense of some statistics, especially now that we have entered a period of accelerated novice and limited licensee upgrading.

1.7 Last year approximately 250 members (4%) held dual licences, this year approximately 450 (6.5%) hold dual licences.

1.8 The introduction of K calls should, from this year on, clarify the situation and allow an equitable comparison. This of course does not entirely explain the present membership situation.

1.9 The recruiting drive prior to WARC and WARC itself caused our ranks to swell.

1.10 We must continue to recruit members. The aftermath of WARC is proving to be costly, with the necessity for the WARC team to continue their involvement in official meetings whenever they may be held in Australia.

2. LICENSING

2.1 Amateur licence fees were increased during the year. Full and limited licence fees were increased from $12.00 to $15.00 and novices from $8.00 to $10.00.

2.2 The introduction of combined limited and novice licences, and the subsequent issue of "K" call signs, has been most welcome, especially with the reduced confusion for operators and a single licence fee payable.

2.3 "C" calls, however, are presently "under the Departmental microscope"

2.4 With the rapid increase in amateur licences, call signs have become a trifle confused, viz., Limited calls Z, Y, X, Novices N, V, P, etc.

2.5 Also affecting licensing was the long-awaited publication of the new Amateur's Handbook incorporating revised operating conditions. This matter is dealt in more detail elsewhere, refer 3.2.

3. REPRESENTATION TO THE DEPARTMENT OF COMMUNICATIONS

3.1 Regular formal meetings have been held with officers of the DOC and I am pleased to report that at our most recent meeting in February, a number of outstanding issues were finalised and others brought closer to fruition. A number of changes have occurred in Central Office staff during the year, and it is hoped that, since their re-organisation, Amateur Radio affairs will be dealt with more promptly.

Important Issues

3.2 *Handbook.* The new Amateur Operator's Handbook was published during the year.

3.2.1 Due to a number of important changes, e.g. introduction of Third Party Traffic, sections of the Handbook are already out of date. The Executive is currently discussing the necessary changes with the Department.

3.2.2 Also of importance, particularly to potential Amateurs, is the matter of non-examinable sections of the Handbook. I am pleased to report that this aspect is also near to finalisation and details should be available soon, perhaps in time for this Convention.

3.3 *Third Party Traffic.* During the opening address for the 1980 Remembrance Day Contest, the previous Minister for Posts and Telecommunications, Mr. Staley, announced the lifting of Third Party restrictions for communications within Australia.

3.3.1 Reciprocal agreements with other countries have been followed up and during February the Department advised the Institute that an agreement had been reached with Canada. It is hoped that the USA will follow soon, together with other countries, including Brazil. This will assist with the Sydney-Rio Yacht Race in 1982.

Miscellaneous

A number of miscellaneous issues were finalised during the year.

3.4 *WIA to WIZ Call Signs.* This suffix block is now held in reserve for WIA official stations.

3.5 *Identification Intervals.* Now administratively clarified at 10 minutes.

3.6 *F5.* Is now permitted for trial period on 23 cm (other higher bands currently under negotiation).

3.7 *Over the Counter Licensing.* Is gradually being introduced to State offices of the Department.

3.8 *Beacon Conditions* were finalised.

3.9 *NBVM* transmissions by Amateurs now approved.

3.10 *Joint Committee (DOC/WIA)* established in most States.

3.11 *Portable Repeaters* for WICEN activities approved (2m and 70 cm band).

3.12 *Equipment Specification* for transmitters are no longer required by DOC with initial licence applications.

Outstanding Issues (which are hopeful of early agreement)

3.13 *Special Prefixes* for national anniversaries, special events, etc.

3.14 *Ten words per minute permanency* for Novices wishing to upgrade to full calls (possibly two year period).

3.15 *F5 on bands above 23 cm.*

3.16 *Log keeping* — removal of mandatory requirements.

3.17 *Intruders;* increase in DOC interest and involvement.

3.18 *Reciprocal Licensing* with other countries.

3.19 *50-50.15 MHz window* on a non-interference basis to be made available.

3.20 *Examination Statistics* as an aid to class instructors.

3.21 *WICEN Call Signs,* special call signs (perhaps abbreviated version of existing call signs) for WICEN activities.

3.22 *"C" Calls.* DOC has raised the question of need for retention as originally envisaged.

3.23 Details of discussions with DOC Central Office are included in the notes of meetings already circulated to Divisions following each meeting.

4. FORMAL SUBMISSIONS

A number of formal submissions were made on behalf of the Amateur Service to various Government Departments during the year.

4.1 Submission for the review of the Citizens Band Radio Service policy was made in August 1980 to the DOC.

4.2 A short submission relating to cable and subscription television services made in October 1980 to the Australian Broadcasting Tribunal

4.3 Comment on the draft table of frequency allocations in January 1981 to the DOC.

4.4 Comments on the proposed Radio Communications Act made in January 1981 to the DOC.

4.5 Needless to say, the preparation of these types of submissions requires considerable effort and time Michael Owen again (or should I say still) carried much of the workload for which I and the Executive are extremely grateful

4.6 However, we are not grateful for the short lead times which were allowed by Government Departments for the preparation of the necessary submissions — this is especially the case with the time allowed by the DOC for submissions relating to the draft frequency table and the new Radio Communications Act. The Christmas-New Year break was disrupted for a number of the Institute's officers by the need to prepare these two major and far-reaching submissions.

> Draft Frequency Table was released for comment 2nd December, 1980 — submissions required by DOC by 16th February, 1981;
>
> Radio Communications Act made available first week of January, 1981 — comments required by 31st January, 1981!

The time allowed for the submission on the new Act was particularly short and for such an important matter is viewed with abhorrence.

4.7 Although not a formal submission as such, the Institute sent a telex to the Minister (P & T) regarding an amendment to the Wireless Telegraphy Act. Our concern was with legal custody and disposal of equipment forfeited under Section 7 of the Wireless Telegraphy Act.

5. DIRECT MEMBERSHIP SERVICES

5.1 *Amateur Radio Magazine.* The Publications Committee Report deals with this matter in detail However, it is significant that during the year publishing costs were contained even in the ambiance of constrained commercial advertising. This, however, did not unduly affect overall quality of our journal and our thanks go to all concerned on the publications side.

5.2 *Call Book.* The 1980 Call Book, intended to be an interim issue between the usual publications each second year, was well purchased by members and others. Finacially, its publication was a success, however some criticism was received because the issue did not contain all updated

information published in earlier issues — although it was not intended that it should.

5.3 *Magpubs.* As agreed at the last Convention, this service is no longer handling subscriptions to overseas magazines with the exception of the NZART, "Break In" and "VHF Communications" This has relieved the office staff of frustrating, time-wasting and unprofitable duties. The sale of books, however, continues and provides Divisions with an additional source of income.

5.4 *Additional Badge.* After a number of years of discussion our Institute now has an internationally recognisable badge — the diamond — which has been well received to date. As Councillors are aware this badge *does not* supersede our traditional one, but will be of great assistance to Amateurs travelling overseas.'

5.5 *Video Tape Library.* This service continues to grow and is a good example of a decentralised Federal activity. We thank John Ingham VK5KG for his efforts in this area, and he can be assured that this service is very well received by Amateurs generally.

5.6 *Broadcast Tapes.* These tapes, recorded by Bill Roper and Ron Fisher, and scripted by the office, usually in conjunction with the Federal President or another appropriate Institute officer, continue to serve a worthwhile function. During the year an experiment was tried with a number of shorter items, which could be broadcast at random. Feedback from Divisions on this approach and the subject of broadcast tapes generally would be appreciated. It would appear that the Federal tape service is still required based on the few comments received from the general membership.

5.7 *EMC and Interference.* At long last with the help of VK3 Division, this vacancy has now been filled Tony Tregale VK3QQ has already made himself known to Divisional Presidents and other office-bearers of the Institute, together with many of the country's Radio Clubs. He has established a small Committee and already collected much information relating to interference from both local and overseas sources

The activities of the Co-ordinator and his team will in time be of great assistance to Amateurs in their "hour of need", as well as assisting Council and Executive.

6. SPECIALIST AND ADVISORY COMMITTEES

Details of the activities of these Committees are included in their Annual Reports. However, a few points are worth noting.

6.1 *Intruder Watch.* Since the receipt of the Intruder Watch Co-ordinator's Report 81.04.04, Graem Fuller VK3NXI has indicated that he is prepared to continue as Federal IW Co-ordinator, although presently he will not be able to devote his full time to this activity. Alf Chandler VK3LC has offered to assist in the operation of IW nets and activities in the interim, as well as continuing as Region 3 Co-ordinator. This aspect of our Institute's activity is very important.

6.2 We are hopeful that the DOC will be able to co-operate more fully in this matter in the near future, so it is important that the WIA does not falter now.

6.3 At the Region 3 IARU Directors' Meeting held last June the following decision was taken — "that the Intruder Watch was a worthwhile activity and that whilst there were many problems in establishing and running the service, the Association should persevere" — so should the WIA!

6.4 *VHFAC.* During the year Keith Malcolm VK3ZYK had to resign his position as Chairman, and Bill Rice VK3ABP, a foundation member of this Committee, took over as Chairman. This Committee continues to act as an important advisor to the Executive.

6.5 *Project Assert.* A worthwhile activity about to founder because of lack of suitable personnel. Monitoring stations continue to gather data, however a good administrator is required to act as Co-ordinator. Approaches have been made to various individuals and Divisions, but so far to no avail. This is another Committee which could operate quite successfully interstate.

6.6 *Non-Ionising Radiation Hazards.* Jim Lloyd VK1CDR continues to represent and inform the Institute in this area.

6.7 *Federal Repeater Committee.* Ken Seddon VK3ACS, Chairman, is presently overseas and we are pleased that Peter Mill VK3ZPP, a long-time member of the Committee, volunteered to act as Chairman in Ken's absence.

6.8 As mentioned previously, the details of the various Committees' activities including those not mentioned in this Report of the Executive are contained in their own Reports to this Convention, however I would like to take the opportunity on behalf of the Executive to thank all of those involved in these very important areas of the Institute's activities, and in particular thanks go to the various people involved in sub-committees located away from Melbourne.

7. IARU AND WARC 79

IARU. David Wardlaw VK3ADW and Michael Owen VK3KI continue to act as our IARU liaison officers. Details of their activities and those of the IARU can be found in the IARU Report.

Some important issues worth focussing on are:—

1. The possible restructuring of the IARU.
2. The next Region 3 Conference, scheduled for April 1982, to be held in the Philippines.
3. During the year Michael Owen, on a private visit to Japan, was able to discuss repeater conditions and reciprocal licensing details amongst other things with the JARL.
4. The Institute has accepted an invitation to attend the 1981 NZART Conference.

7.1 *WARC 79.* Both David Wardlaw VK3ADW and Michael Owen VK3KI continued handling the important matters arising from WARC 79. During the past year they attended a number of meetings, the culmination of which was the release by the Government of the Draft Table of Frequency Allocations.

7.2 As widely reported in Amateur Radio and on the broadcasts, the Institute prepared and submitted its response to the Draft.

7.3 Individual members were also encouraged to respond to the Draft via a proforma included with February AR.

7.4 Both David and Michael deserve a special vote of thanks for the considerable effort they continue to put into this important matter.

7.5 Work towards the allocation of the new bands at 10, 18 and 24 MHz is proceeding and it is hoped that this subject, and the latest situation, will be discussed at the Convention.

8. MISCELLANEOUS

This section deals with a number of unrelated subjects but nonetheless important, particularly to the future of Amateur Radio in this country.

8.1 *Channel 0, 5A and UHF.* The same problems as have been discussed at many Conventions still exist in the Channel 0/Channel 5A area. Suffice to say that whenever the opporunity presents itself to point out to the authorities the views of the Amateur Service, this is done Both of these channels continue to be used for the broadcasting service.

8.2 Perhaps the only "high point" during the year was the introduction of UHF television broadcasting in both Sydney and Melbourne, with its obvious advantages to both the general public and the Amateur Service. Un-

fortunately, there appears to be little being done, even by Amateurs, to convince John Citizen that there are advantages in using UHF.

8.3 *Education.* We should be responsive to the need for Amateurs to upgrade themselves, especially those wishing to move from the Novice ranks into those of the limited and/or full call.

8.4 Greater assistance to Amateur bodies in Region 3 is worthy of consideration. We have occasionally provided reference material (books, etc.) to groups of Amateurs, particularly in low income countries. WIA video tapes have been forwarded by our video tape Co-ordinator to Clubs in the Solomon Islands and Vanuatu.

8.5 Our magazine, Amateur Radio, is sent to all sister societies in Region 3, but perhaps it would be to Amateur Radio's long term interest if clubs in some of the poorer countries within Region 3 were supported, perhaps by "sister clubs" in Australia, i.e. an Australian Club adopting a similar Club in one of these countries. There would, however, be a number of major problems associated with the co-ordination of such an activity.

8.6 *Wilful Interference.* It was reliably reported during the year that some Amateurs were causing wilful interference to other services.

8.7 Individuals should consider the implications very carefully before setting themselves up as judge and jury, particularly on emotional issues such as Channel 0 and Channel 5A.

8.8 Not only is their reputation at stake, but so is the entire Amateur Service — bad publicity we can do without!

8.9 *Administrative Involvement.* Volunteer labour is becoming harder to find. We are *all* entering an era of change in the administration of our Institute. This is presently most noticeable in the publication of our journal, Amateur Radio, where paid staff now carry out the production functions of the magazine. Some years ago this was entirely done by volunteer workers.

8.10 Members expect their money's worth these days. They expect prompt replies to their queries and they expect the Institute to operate in a professional manner. This requires *people* and expertise.

8.11 I sense that many volunteers within the Federal systems, and I include those that make up the many sub-committees, are getting tired, particularly here in VK3. The mushrooming of Radio Clubs, especially in the major centres such as Sydney and Melbourne, has meant that those who do have administrative abilities and interests are already deeply involved in running *their* Club.

8.12 In some States, Divisional Councils are having difficulties in finding interested Amateurs to become involved in Council affairs or even finding sufficient members to make a quorum. The causes are many, but the effect is the same. We, within the Institute, no longer have a choice but, by necessity, take whoever shows the slightest interest in the administrative side of Amateur Radio. And when this lack of suitable "labour" is coupled with unnecessary duplications, as so often happens, there is a very real risk that "the willing horse will be flogged to death"!

Recruiting

8.13 In Section 1 reference was made to the declining rate of increase in new members. Reference was also made to the necessity to continue recruiting.

8.14 During 1980 $1500 was spent on membership recruiting. For this year (1981) $3000 has been allocated.

8.15 Most of our expenditure in this area has been in advertisements —ARA, CBA, etc. Such advertisements still appear worthwhile — but only just, and it is expected that their worth will diminish with the decline in new licensees.

8.16 A direct approach to new licensees is worthy of consideration. In the past some Divisions have done this independently but perhaps a co-ordinated central aproach may be better.

9. EXECUTIVE

9.1 The Executive for 1980/81 was elected as follows:—

Peter Wolfenden VK3KAU
President, Chairman

Ken Seddon VK3ACS
Vice Chairman, Chairman Repeater Sub-Committee

Courtney Scott VK3BNG
Hon. Treasurer, Chairman Finance Sub-Committee

Bruce Bathols VK3UV
Editor Amateur Radio

Harold Hepburn VK3AFQ
DOC Negotiator

Bill Roper VK3ARZ

9.2 Whilst not members of the Executive, David Wardlaw VK3ADW (Immediate Past President) and Michael Owen VK3KI attended Executive Meetings and were of great assistance during the year.

9.3 Those who attended Executive Meetings are listed in Appendix 2.

9.4 Also sharing the workload with the Executive were the Federal Officers:

IARU R3 Liaison Officers
Mr. M. J. Owen VK3KI and
Dr. D. A. Wardlaw VK3ADW

Satellites and Spec. Projects Co-ord.
Mr. R. C. Arnold VK3ZBB

Federal Intruder Watch Co-ord.
Mr. G. Fuller VK3NXI

Ch. Fed. Repeater Sub-Comm.
Mr. K. C. Seddon K3ACS

Federal Education Co-ord
Mr. R. E. Hartkopf VK3AOH

Federal Historical Officer
Mr. G. M. Hull VK3ZS

Federal Contest Manager
Mr W. A. Watkins VK2DEW

(VK/ZL/O Contest Manager)
Mr. N. E. Penfold VK6NE

Federal QSL Manager
Mr. N. E. Penfold VK6NE

Federal Awards Manager
Mr. W. D. Verrall VK5WV

Ch. VHF/UHF Advisory Comm.
Mr. K. G Malcolm VK3ZYK

Federal EMC Co-ord.
Mr. A. Tregale VK3QQ

Federal WICEN Co-ord.
Mr. R. G. Henderson VK1RH

Federal Videotape Co-ord.
Mr. J. F. Ingham VK5KG

Ch. Federal Finance Sub-Committee and Hon. Federal Treasurer
Mr. C. D. H. Scott VK3BNG

10. OFFICE AND STAFF

10.1 Details of this aspect of the Institute's operation can be found in the Secretary's Report. However, a few important events during the year were:—

The resignation of Mr. Mark Stephenson VK3NOY (VK3PI), and the subsequent appointment of Mr. Bill Baly for AR production work;

The resignation of Mrs. Joan Seddon and the subsequent appointment of Mrs. Ann McCurdy;

The purchase of a new photocopying machine;

The purchase of some additional office furniture.

10.2 In the operation of an organisation such as ours, it is essential that we have a nucleus for everyday business activities. Because of the present structure of the Institute and because we rely heavily on so many volunteers right across Australia, we need an efficient and responsive office — for without it the Institute would soon be in difficulties.

10.3 I would like to personally thank our four hard-working employees, and also of course, the two who resigned earlier this year, who have all been of great assistance not only to me personally but to all associated with the administrative aspects of Amateur Radio in this country.

10.4 Present office staff are:—

Mr. P. B. Dodd, Secretary/Manager.

Mr. L. G. Baly, AR Production.

Mr. C. W. Perry, Membership Records/EDP.

Mrs. A. McCurdy, Secretarial and general duties.

In conclusion I would like to thank all officers of the Institute who gave so readily of their time. I would also like to thank those many individual amateurs who went out of their way to assist or advise in the running of the Institute and through it Amateur Radio in this country.

Personally, I have found the task of being Federal President somewhat demanding, however I believe that the flurry of activity this year has produced some worthwhile results, particularly in the DOC area. Also some foundation stones — let's hope firm ones — have been laid in other areas for the future.

(Sgd.) P. A. WOLFENDEN VK3KAU
Federal President.

APPENDIX 1

Membership Statistics. These have been compiled on the same basis as in previous years. It should be noted that DOC statistics refer to licences issued, whereas WIA statistics refer to the number of individual amateurs. All statistics are for 31st December, 1980 (previous year in brackets, same date)

TABLE 1

	Total Licences		WIA Licensees		% members to total licensees		Other WIA members		Total WIA members	
VK1	308	(280)	160	(157)	52	(56)	39	(60)	199	(217)
VK2	4806	(4091)	1905	(1841)	40	(45)	198	(246)	2103	(2087)
VK3	4292	(3639)	1995	(1747)	46	(48)	321	(367)	2316	(2114)
VK4	2129	(1726)	1043	(944)	49	(55)	137	(159)	1180	(1103)
VK5/8	1809	(1526)	963	(854)	53	(56)	160	(226)	1123	(1080)
VK6	1086	(914)	552	(488)	51	(53)	97	(107)	649	(595)
VK7	436	(384)	254	(256)	58	(67)	55	(62)	309	(318)
Other	36	(34)	—	(—)	46	(50)	1007	(1227)	7879	(7514)
Totals	14906	(12596)	6872	(6287)	—	(—)	—	(—)	—	(—)

Note: To the above may be added 91 licensed and 12 unlicensed clubs = 103 clubs in EDP records (not regarded as members this year) — affects % by 1% only

TABLE 2. % increases/decreases:

	DOC Licences %	WIA Licensees %	Total WIA Members %
VK1	+ 10	+ 2	— 8
VK2	17	3	+ 1
VK3	18	14	+ 10
VK4	23	10	+ 7
VK5	18	13	+ 4
VK6	19	13	+ 9
VK7	14	0	— 3
Total	+ 18	+ 9	+ 5

TABLE 3. Numbers of WIA members holding [redacted] calls (nominal):

VK1	7
VK2	136
VK3	126
VK4	97
VK5	40
VK6	26
VK7	14
	446

6872 + 446 = 7318
446 = 6.5% of 6872
+ 6.1% of 7318
6.1% of 14906 = 909
14906 — 909 = 13997
6872 = 49% of 13997

TABLE 4. Total licences by grades and growth rates (%):

	Full		%	Limited		%	Novice		%	Total	
VK1	176	(171)	3	48	(46)	7	84	(14)	31	308	(280)
VK2	2396	(2128)	13	1104	(943)	17	1304	(1019)	28	4806	(4091)
VK3	1919	(1630)	18	1278	(1132)	13	1095	(877)	25	4292	(3639)
VK4	827	(741)	12	586	(459)	28	716	(526)	36	2129	(1726)
VK5/8	840	(729)	15	380	(369)	3	589	(430)	37	1809	(1526)
VK6	558	(498)	12	272	(224)	21	260	(194)	34	1086	(914)
VK7	222	(198)	12	114	(100)	14	100	(86)	16	436	(384)
Other	—			—			—			36	(34)
Totals	6938	(6126)	+13	3782	(3273)	+16	4148	(3197)	+30	14906	(12596)

TABLE 5. WIA members by grade:

	F/C	A/T	S (Student)	G (Pens.)	L (Life)	X (Fam.)	Clubs	
VK1	187	39	—	—	1	1	3	
VK2	1668	173	47	168	12	35	21	
VK3	1676	269	172	181	7	33	28	
VK4	965	126	4	65	5	25	28	
VK5	865	132	27	86	4	19	12	
VK6	497	82	22	39	5	4	11	
VK7	230	47	4	15	6	7	—	
	6047	868	276	524	40	114	103	
Federal	—	—	—	—	10	—	—	
	6047	868	276	524	50	114		Total 7879

Note: 240 S grade, 446 G grade, 45 L grade and 94 X (Family) grade hold licences analysed as follows

	S	G	L	X (Family)	Total	Clubs
VK1	—	—	1	1	2	3
VK2	45	149	11	32	237	18
VK3	157	132	6	17	312	24
VK4	2	48	4	24	78	25
VK5	18	74	4	12	108	11
VK6	16	31	5	3	55	9
VK7	2	12	5	5	24	—
Federal	—	—	9	—	9	—
			45	94	825	91

APPENDIX 2.

Attendance at Executive Meetings (excluding Meeting on 23rd April, 1981).

	Attended	Maximum
Mr P Wolfenden	13	13
Mr. B Bathols	12	13
Mr. H. Hepburn	6 + 1 (apptd 3/80-81)	11
Mr C Scott	13	13
Mr K Seddon	11	11
Mr. M Owen	2	—
Dr. D Wardlaw	7	—

Also attended Messrs L G Baly 6/7 P B Dodd 13/13, R Harikopf 1, K. Malcolm 1 A. Noble 1, T Pilman 3, W Rice 1, M. Stephenson 2, A. Tregale 1

THE WIRELESS INSTITUE OF AUSTRALIA
A COMPANY LIMITED BY GUARANTEE
INCORPORATED IN VICTORIA UNDER THE COMPANIES ACT, 1961

In accordance with the Companies Act, 1961, the Executive state the following:—

(a) The names of the Executives in office at the date of this report are —

P. A. Wolfenden	VK3ZPA
K. C. Seddon	VK3ACS
C. D. H. Scott	VK3BNG
H. L. Hepburn	VK3AFQ
B. R. Bathols	VK3UV
W. J. Roper	VK3ARZ

(b) The principal activity of the Wireless Institute of Australia is to

1 Represent generally the views of persons connected with Amateur Radio in the Commonwealth of Australia, its territories and dependencies.

2 Promote the co-operation between the Divisions in the encouragement and development of amateur radio

3. Safeguard the interest of the Divisions and the members in relation to frequency allocations, rights and privileges

4 Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.

(c) The surplus of income over expenditure for the year ended 31st December 1980, was $271 compared with $4 734 for 1979 There is no provision for income tax required as the Company is exempt under Section 103A(2) of the Income Tax Assessment Act

(d) During the year provisions were increased:—

1 Provision for holiday and long service leave was increased by $7 306 to $12,498.

2 Provision for Superannuation — increased by $1,000 to $6,879.

(e) The Executive has taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making of provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts

(f) At the date of this report the Executive is not aware of any circumstances which would render the amount written off for bad debts, or the amount of the provision for doubtful debts, inadequate to any substantial extent.

(g) At the date of this report the Executive is not aware of any circumstances which would render the values attributed to current assets in the accounts misleading

(h) At the date of this report no charges exist on the assets of the Institute which have arisen since the end of the financial year and does not secure the liabilities of any other person

(i) There does not exist any contingent liability which has arisen since the end of the financial year

(j) No contingent liability or any other liability has become enforceable within the period of twelve months after the end of the financial year which in the opinion of the Executive will or may affect the ability of the Institute to meet its obligations when they fall due.

(k) Since the end of the previous financial year the Executive has not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which its members are also members or with companies in which members have substantial financial interests

(l) The results of the Institute's operations during the financial year were in the opinion of the Executive not substantially affected by any item, transaction or event of a material and unusual nature There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the Executive to affect substantially the results of the Institute's operations for the next succeeding financial year

Dated at Melbourne this 9th day of April, 1981

MEMBERS OF THE EXECUTIVE

(Sgd.) C. D. H. SCOTT
(Sgd.) B. R. BATHOLS

STATEMENT OF INCOME AND EXPENDITURE FOR YEAR ENDED 31st DECEMBER, 1980

		1979
Income:		
Members' Subscriptions	$112,731	$97,096
Interest Received	7,654	5,135
Surplus Megpubs/Book Sales	9,863	20,743
Donations — WARC/Other	261	81
Expenditure:		
Amateur Radio (Note 1)	63,237	58,517
Audit Fees 1978	—	578
— 1979	(82)	700
— 1980	600	—
Award Payments	200	—
Bank Charges	10	381
Committee Expenses	261	1,011
Convention Expenses	5,529	4,330
Depreciation	552	534
Electricity	564	524
ELP Expenses	4,000	3,300
General Expenses	130	749
Holiday Pay and Long Service Leave Provision	7,306	1,892
Insurance	703	757
Licences and Fees	220	—
Membership Recruiting	1,477	3,023
Postage and Freight	3,895	4,205
Printing and Stationery	4,061	2,789
Rent and Rates	4,143	3,317
Repairs and Maintenance	174	228
Satellites and Special Projects	189	—
Salaries and Secretarial	30,234	29,658
Superannuation	1,000	1,000
Telephone	936	651
Travelling Expenses	999	182
	130,338	118,326
Net Surplus	271	4,734
Accumulated Funds Brought Forward	37,834	33,100
Accumulated Funds Carried Forward	$38,105	$37,834

BALANCE SHEET AS AT 31st [redacted]

			1979
Members' Funds.			
Accumulated Funds	$38,105		$37,834
Add ITU/WARC	533		533
IARU (Note 2)	1,029		533
		$39,667	
			$38,367
Special Fund — Ron Wilkinson Achievement Award (Note 3)		1,273	1,213
		$40,940	$40,422
Represented by:—			
Current Assets:			
Cash on Hand		$115	—
Commonwealth Trading Bank		4,695	$14,521
Commonwealth Savings Investments		—	2,104
Australian Savings Bonds		10,000	42,100
Australian Resources Development Bank		8,000	2,200
R.E.S.I. Building Society		40,223	—
Sundry Debtors — Less Provision for Doubtful Debts ($2,000)		17,413	18,264
Stock on Hand — At Cost		7,757	4,714
			83,903
Non-Current Assets:			
Furniture and Fittings — At Cost Less Provision for Depreciation ($1,426)		2,207	1,798
			85,701
Deduct Current Liabilities:			
Sundry Creditors		6,590	1,603
Subscriptions in Advance		20,431	25,833
Provisions —			
Superannuation		6,879	5,879
Amateur Satellites		2,972	2,972
Holiday and Long Service Leave		12,498	5,192
Deposit VK4		300	300
Dick Smith Education Fund		—	3,500
		49,670	45,279
		$40,940	$40,422

NOTES TO AND FORMING PART OF THE ACCOUNTS

AMATEUR RADIO (Note 1)

	1980	1979
Income:		
Advertising	$24,519	$32,198
Subscriptions and Sales	2,421	1,719
Inserts and Sundries	1,896	2,946
	$28,836	$36,863
Expenditure:		
Awards	90	90
Debt Collection	297	—
Postage	16 252	13,555
Honoraria	—	4,400
Publishing Costs	61,411	66,095
Salaries	14,118	7,941
Travelling Expenses	905	1,299
	$92 073	$95,380
Excess Expenditure Transferred to General Account Representing Cost of AR to Members	**$63,237**	**$58,517**

IARU FUND (Note 2)

		1980	1979
Balance Brought Forward		$842	$390
Add Members' Contributions		1 450	1,145
		2,292	1,535
Less Donation to ARU	$500		
Expenditure	793		693
		1 293	
Balance Carried Forward		$1,029	$842

RON WILKINSON ACHIEVEMENT AWARD (Note 3)

	1980	1979
Balance Brought Forward	$1,213	$1,153
Add Interest	110	110
	1,323	1,263
Less Award Payment	50	50
	$1,273	$1,213

AUDITORS' REPORT TO THE MEMBERS OF THE WIRELESS INSTITUTE OF AUSTRALIA

1 In our opinion, the accompanying accounts which have been prepared under the historical cost convention, are properly drawn up in accordance with the provisions of the Companies Act and so as to give a true and fair view of —

(a) 1 The results of the Institute for the year ended 31st December 1980 and the state of its affairs at that date

2 The matters required by the Companies Act to be dealt with in the accounts

(b) The accounting records and other records and registers, required by the Act to be kept by the Company have been properly kept in accordance with the provisions of that Act

HEBARD & GUNNING, Chartered Accountants
Melbourne (Sgd.) P. W. HEBARD
9th April 1981 Partner

THE WIRELESS INSTITUTE OF AUSTRALIA EXECUTIVE STATEMENT

In our opinion

(a) The Statement of Income and Expenditure is drawn up so as to give a true and fair view of the surplus of the Institute for the financial year ended 31st December, 1980.

(b) The Balance Sheet is drawn up so as to give a true and fair view of the state of affairs of the Institute as at the end of the financial year

MEMBERS OF THE EXECUTIVE
(Sgd.) C. D. H. SCOTT
(Sgd.) B. R. BATHOLS

STATEMENT OF PRINCIPAL ACCOUNTING OFFICER

To the best of my knowledge and belief the accounts for the year ended 31st December 1980, give a true and fair view of the matters contained in Section 162 of the Companies Act, 1961, and required to be dealt with in the accounts as presented.

PRINCIPAL ACCOUNTING OFFICER
(Sgd.) P. B. DODD

Home-Brewer's Linear Amplifier

for the 3.5, 7.0, 14, 21 and 28 MHz Bands

Drew Diamond VK3XU 43 Boyana Crescent, Croydon 3136

INTRODUCTION

There are many transceivers and transmitters in use today which deliver 2 to 10W CW and perhaps 30W PEP for SSB such as the popular FT7. The users of such equipment often require more power in order to compete with the many powerful stations and during periods when propagation conditions are very poor. Newly qualified full-call operators may wish to take advantage of the higher power privilege without going to the expense o fobtaining a new transceiver.

A linear amplifier lends itself very well to home construction, as the only test gear required is a multimeter, two SWR meters, a dummy load and perhaps an oscilloscope should it be necessary.

The choice today lies with modern solid-state devices, or a traditional electron-tube design. At present the cost of each is about the same in terms of dollars per watt economics. However many of the components required for a tube amplifier can be gathered at little or not cost, depending upon the resources of the builder. For instance, the power transformer and many other components can be salvaged from an old black and white TV set.

Some advantages of a tube amplifier over a solid-state design are:

- Cheaper, depending upon resources. Helps recycle old parts.
- May be used with loads which depart substantially from 50 ohms.
- Tubes will withstand maltreatment more readily than transistors.
- all the parts are relatively easy to obtain.

And some disadvantages of a tube amplifier are:

- Dangerous voltages are used with tubes.
- Tune-up is required for each band change.
- Replacement tubes may be difficult to obtain in five to ten years.

The amplifier to be described covers the 3.5, 7.0, 14, 21 and 28 MHz bands. Power output is about 100W, 160W PEP for 2W input. Input SWR is less than 1.5 on every band. Two-tone third-order intermod distortion is in the order of —30 dB.

CIRCUIT DESCRIPTION

A pair of 6146 tetrodes are used in parallel. These tubes were chosen for their ruggedness, electrical characteristics and general availability. Cost per tube is around $13 at present.

The input signal is matched to a 1.5k resistor via a 50 ohm to 1.5k ohm pi matching network for each band. By stepping up the impedance in this manner, it becomes possible to fully drive the amplifier with a relatively small signal. The input capacitance of the tubes, strays and coax all become part of the right-hand side of the network. Selectivity is improved too, so that any out-of-band spurii are attenuated before being presented to the tubes for amplification. Neutralisation is unnecessary due to the swamping effect of the 1.5k terminating resistor.

The tubes are operated in class AB1. Bias is applied to the grids via the terminating resistor. The grid circuit is metered so that any grid current due to overdriving can be detected. The screen grids are held at +210V for correct linear operation. Two 105V regulator tubes in series are used to establish this voltage.

The plates are fed with HT via plate choke L6 which has an inductance of 95 uH and is series resonant at 25 MHz, thus presenting a high impedance at all frequencies used. Parasitic suppressors Z1, Z2 and the 10 ohm grid resistors discourage VHF oscillation. The plate impedance is matched to the output via a band switched pi coupler to a nominal load of 50 ohms. L8 provides a DC ground should the plate blocking capacitor fail. The 0.3A fuse will blow under this fault condition.

Plate supply of about +650V is obtained from a full-wave rectifier comprising three series 1 kV diodes in each arm. Resistors of 470k across each diode force an equal voltage distribution during reverse cycles. The CR network across the 500V winding provides transient protection for the diodes. Screen voltage is obtained from the CT of T1. The 5V and 6.3V windings are connected in series and rectified to supply about +13V for the relays A-F.

Relays A-E switch in the input network appropriate to the selected band. A spare set of contacts on the bandswitch (S2a) achieves this. Changeover relay R routes incoming signals around the amplifier during the receive mode of transceiver operation.

Bias potential is obtained from a full-wave bridge on the 240V (now 100V) winding of T2 connected back to front and powered from the 5V winding of T1. The 10k WW potentiometer taps off about —50V for grid bias.

The meter circuit is in fact a 20k ohm/volt voltmeter with 1V sensitivity. With S3 in the grid current position, the meter reads 5 mA full-scale (no grid current should flow for AB1). Cathode current (plate plus screen, but labelled plate) is measured in the second position.

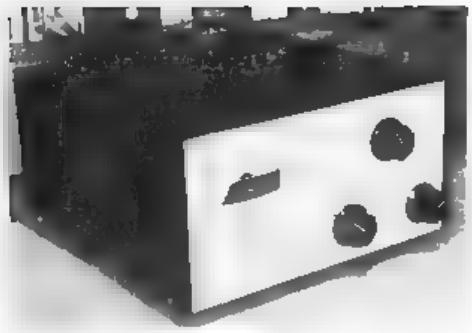
CONSTRUCTION HINTS

Anyone building this amplifier should be experienced in constructing high-power/high-voltage equipment. Less experienced builders should only attempt a project of this kind under the guidance of someone well versed in high-voltage work. The need for care cannot be overstressed as the voltages used in this amplifier *can kill* or at best cause painful burns.

The prototype is housed in a commercially available enclosure measuring 29 cm W, 15 cm H and 29 cm D, and has a removable top cover.

All components associated with the input are separated from the output by a partitioning shield. Conductors which must pass through the shield should be bypassed. The five feedthrough capacitors for the input relay conductors may be soldered to a square piece of double-sided PCB.

The conductor carrying the plate supply should pass through a feedthrough insulator or grommet and have a bypass close to the shield. The inner conductor from a length of RG58 coax may be used for high voltage wiring. Keep the braid and use it to connect the various components in the



General View

output network as shown in the photo. If the amplifier is to be housed in an anodised case, such as the one used for the prototype, the ground connections for the output components should all be connected together using braid.

The 6146 sockets should have a solder lug under each mounting nut so that bypass capacitors for cathodes and screens may be mounted close to the tube pins for best effectiveness. The 10 ohm resistors in the screens and grids should also be placed close to the sockets with minimum lead length.

Two or three layers of insulating tape should be wrapped around the 200 uF filter capacitors where they are fixed in their clamps in order to prevent voltage breakdown.

A dozen holes of 1 cm diameter must be made in the enclosure above and below the 6146s so that they may be cooled by convection. There is room for a small blower if continuous (RTTY) operation is planned. A path for convected air through the input side of the shield should also be provided for cooling transformers, diodes and resistors.

Power transformer T1 may be salvaged from an old B and W TV set which employs a 5U4 or 5AS4 type rectifier. Such a transformer should have the necessary windings and capacity for the project. When the transformer has been removed from the set locate the primary (240V) winding. It will probably have taps for 220, 230, 240 and 250V. Use the 250V tap. A multimeter with a x1 ohms range can be used to locate these. Some typical winding resistances are shown on the circuit. The 5V and 6.3V windings will probably have wires of 18 or 16 gauge covered with plastic tube. The HV winding should have red covered wires with a black centre top (CT). Check with a multimeter for about 40 ohms from red to red and 20 ohms from any red to black.

Test the transformer by applying 240V AC to the primary and no loads on the secondaries (keep hands off the powered transformer). The unloaded transformer should only be warm after some hours operation. If it gets too hot to touch it is probably faulty.

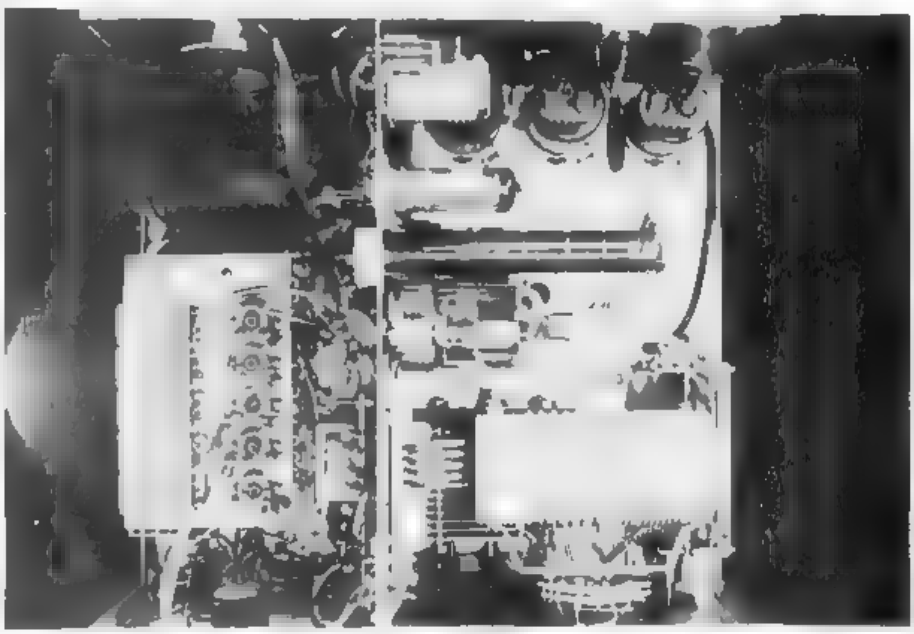
Voltages may be checked by connecting a multimeter to the various secondary windings. Remember to remove the primary power when changing connections! When the 5V and 6.3V windings have been located, connect one lead of the 6.3V pair to one of the 5V. Measure the total voltage; if it reads about 1.3 choose another lead and check again. It should read about 11.3 when the phasing is correct.

The 6146 plate connecting caps may be fabricated from 20 gauge brass sheet, cut to size and formed by wrapping it round the shank of a 1 cm twist drill. Parasitic suppressors Z1 and Z2 consist of three turns of 18 B and S wire wound on a 47 ohm 2W carbon resistor. They should be soldered to the plate caps with minimum lead length.

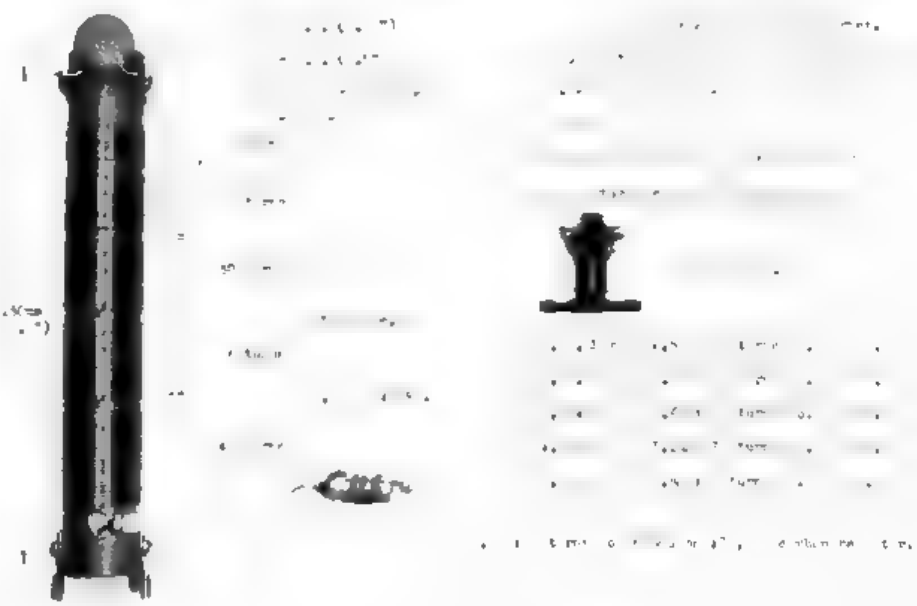
The capacitors used on the input (50 ohm) side of the input networks may be ceramic, styroseal (poly) or silver mica types with voltage ratings greater than 150V. Similar capacitors should be used on the 1.5k side with ratings of at least 300V. All bypass and blocking capacitors should be disc ceramic or mica with voltage ratings as indicated on the circuit.

The 250 pH variable capacitor in the output network may be difficult to obtain. Emtronics of Sydney can supply 3.5 kV units although this voltage rating is in excess of that actually required as a 1 kV unit will do the job. The loading capacitor consists of a three gang 415 pF per section broadcast capacitor. Watkin Wynne of Sydney can supply these. L7, the band-switched output coil, is a ready-made unit, and may be obtained from William Willis & Co. Pty. Ltd. in Melbourne (see ads in AR).

A 240V to 12V 150 mA transformer is used at T2. The turns ratio is 20:1, so



Top View



with 5V applied to the 12V winding, 100V will be obtained from the 240V winding.

All resistors should be carbon except the two wire-wound resistors which feed the regulated screen supply. These resistors may be heat-sunk to the shield as shown in the photo in order to disperse the heat that they produce

[illegible]

After wiring checkout switch the amplifier on with the output tubes removed. Carefully measure the +650, +210 and —VE bias supplies. Set the bias pot for –50V on the slider. All being well, switch off and install the tubes (remember to allow the filter capacitors to discharge).

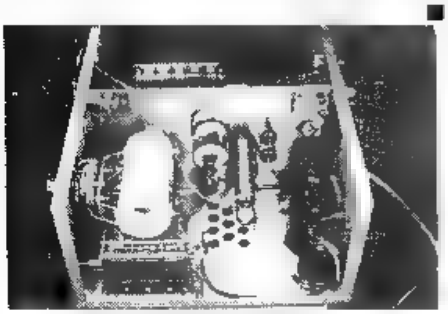
To adjust the input networks Connect the amplifier output to a dummy load via an SWR meter and connect the exciter to the amplifier via a second SWR meter. One or two watts of carrier drive should be applied to the amplifier input. Some transceivers such as the FT7 have no drive control so 6 dB of attenuation must be inserted between the exciter and the SWR meter. Note that the SWR meter must go between any attenuator and the amplifier input, otherwise the attenuator would absorb much of the reflected signal, and yield a false SWR reading.

Power-on and after the heaters have warmed up set the bias pot for 50 mA of no-signal plate current. Close S4 or ground PTT and apply carrier to the input. With the amplifier bandswitch set to correspond to each exciter band the appropriate slugs of inductors L1 through L5 are adjusted for minimum SWR for each band. It should be possible to obtain an input SWR of less than 1.5 on each band. The amplifier output network must be tuned for each band being so adjusted with the output SWR meter indicating output power. Little or no grid current should be allowed to flow during this set-up. The plate current will be about 200 to 250 mA when the input and output networks have been properly adjusted. The input SWR meter is no longer required after successful completion of these adjustments.

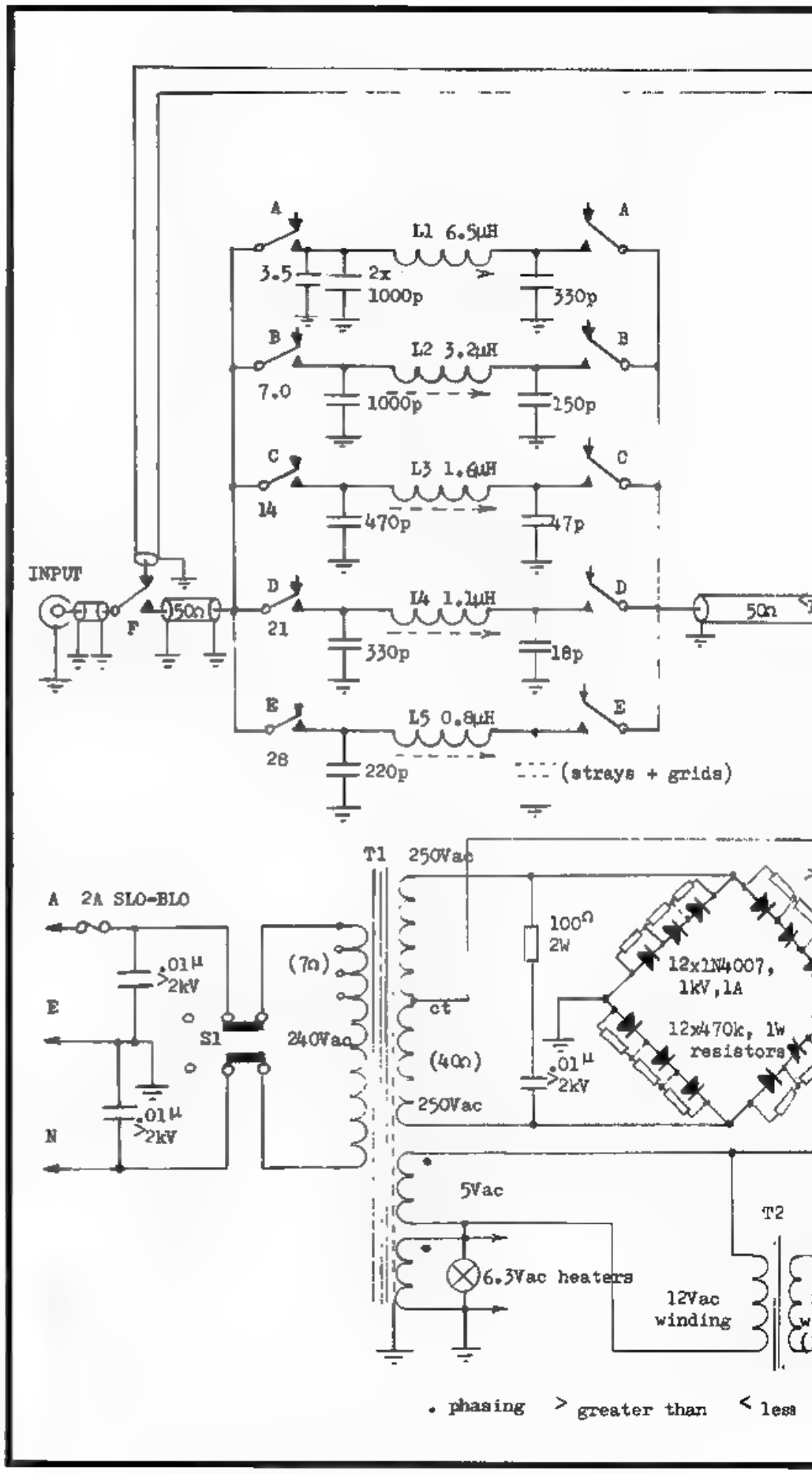
During on-air operation with CW or SSB the grid current should be checked periodically to ensure that little or no current is being caused to flow otherwise key clicks or splatter will occur.

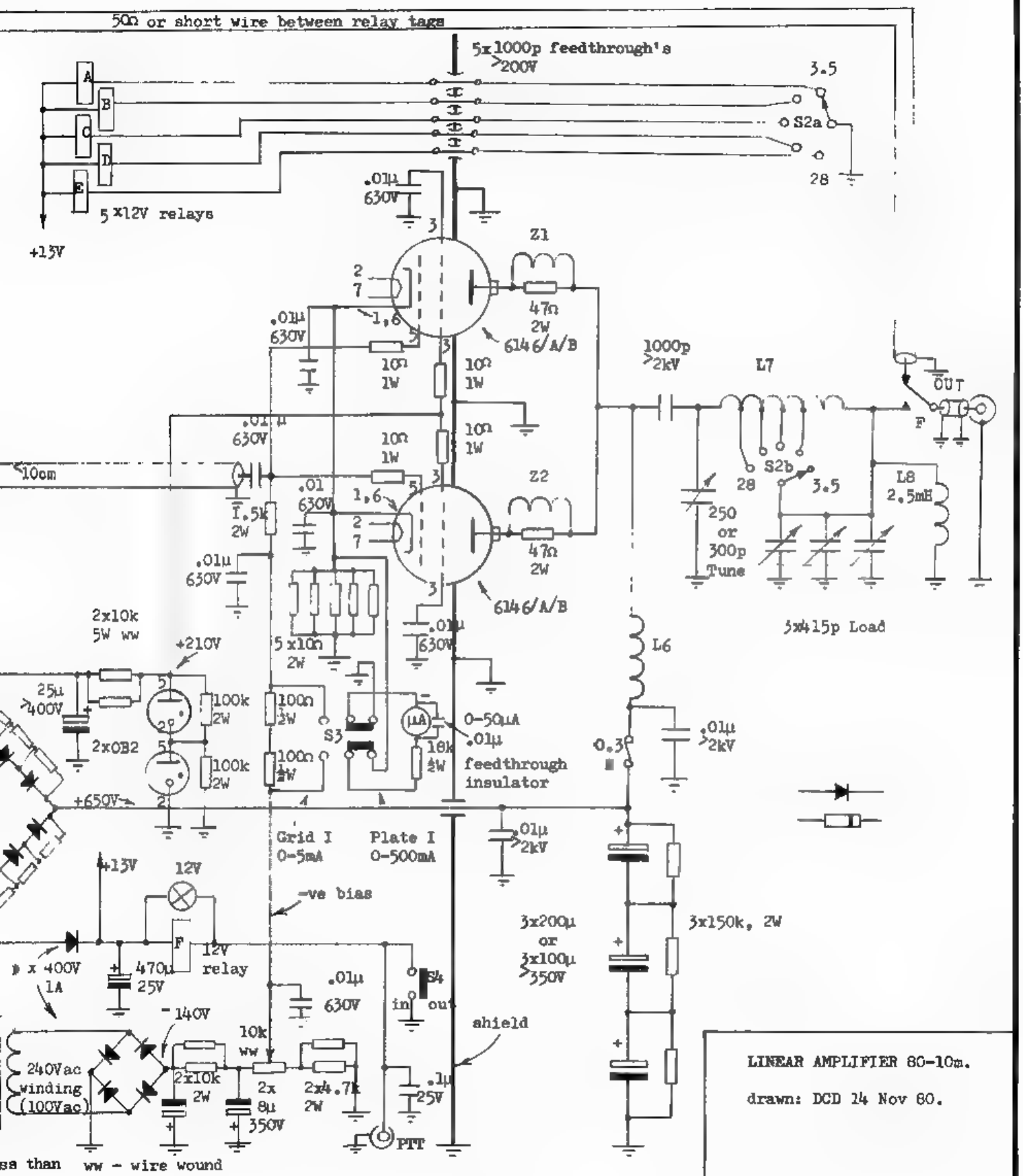
The author wishes to thank Nick Kane for the photos and Terry Fraser VK3DCL for the loans of his FT7 with which we performed the two-tone IMD measurements.

■



Output Side




50Ω or short wire between relay tags
5x1000p feedthrough's
>200V
A
B
C
D
E
5 x12V relays
+13V
3.5
S2a
28
.01µ
630V
Z1
47Ω
2W
6146/A/B
10Ω
1W
1000p
>2kV
L7
OUT
F
S2b
28
3.5
L8
2.5mH
250
or
300p
Tune
3x415p Load
10cm
1.5k
2W
.01
630V
Z2
1,6
2x10k
5W ww
+210V
5 x10Ω
2W
L6
25µ
>400V
2xOB2
100k
2W
100Ω
½W
S3
µA
0-50µA
18k
½W
feedthrough
insulator
0.3
.01µ
>2kV
+650V
Grid I
0-5mA
Plate I
0-500mA
+13V
12V
-ve bias
3x200µ
or
3x100µ
>350V
3x150k, 2W
x 400V
1A
470µ
25V
12V
relay
S4
in
out
shield
-140V
10k
ww
240Vac
winding
(100Vac)
2x10k
2W
2x
8µ
350V
2x4.7k
2W
.1µ
25V
PTT
ss than ww - wire wound
LINEAR AMPLIFIER 80-10m.
drawn: DCD 14 Nov 80.

VK2 MINIBULLETIN

COUNCIL REPORT

At the May Council meeting, Bill Martin VK2PFH was appointed VK2 Intruder Watch Co-ordinator for 1981-82. NSW members reporting on commercial intruders into primary amateur frequencies can send reports noting the date, time, frequency, signal strength and, if heard, any call sign or identifictaion either direct to Bill at 33 Somerville Road, Hornsby Heights 2077, or to Divisional office. Bill has sent information on Intruder Watching to all VK2 affiliated Clubs. Please help Bill to help us by sending reports to him.

Council was pleased to welcome Armidale and District Amateur Radio Club to affiliation with the NSW Division. Armidale's address is c/- 201 Kennedy Street, Armidale, NSW 2350. Any club which would like to apply for affiliation with the NSW Division and join with the 29 other affiliated clubs at the next Conference of Clubs in November can do so by writing to the Divisional Secretary requesting affiliation, enclosing two copies of the Club's constitution and listing five Club members who are also ordinary (full) members of the NSW Division.

At the meeting, Divisional President, Athol VK2BAD, and Secretary, Sue VK2BSB, reported on a meeting called by the Land and Environment Court in May. The meeting was attended by an assessor from the court, representatives from Campbelltown City Council, counsel for Mal Martyn VK2VWG, and the Divisional President and Secretary. The meeting could not arrive at a compromise and the case will now go to court. The hearing has been set down for 21st July. To date (29/5/81) $805 has been donated to the Tower Fund. Many thanks to those who have donated recently: Summerland ARC $20, N. Cornish $25, P. Lord VK3NPL $50, B Field $8, G McDonald $10, R. Biddle $5, A. Cory $10, St. George ARS $50, W Swanston $5, J. Mead $10, P Medway $10, and L and M. Salmon $10. If you would like to help Mr. Martyn in his appeal against the rejection by Campbelltown City Council of his application to erect a 17m guyed commercial tower for amateur use, please send cheques made out to the WIA to Box 123, St. Leonards 2065.

QSL BUREAU

In March, Hunter Branch advised Council by letter that they were unsuccessful in filling the position of QSL Officer for the Division. The Division's QSL Officer over many years has been Bill Hall VK2XT, an Honorary Life Member of the NSW Division. Council and all members are extremely grateful for the many years of unstinting effort donated to the Division by Bill and his team of helpers, in particular Fred Myers VK2AAX and Lew Ansell VK2BTO, to name but two who have assisted Bill. Divisional Council will make a presentation to Bill at the next General Meeting in recognition of his many years of valued assistance to the Division.

At the April Council meeting the urgency of maintaining QSL Bureau continuity was discussed and Council decided to bring the Bureau to Sydney. Council arranged with Hunter Branch to pick up the Bureau's effects on Sunday, 26th April. Five Divisional Councillors went to Newcastle, and while there received a request from Westlakes Amateur Radio Club to have discussions with seven of their committee and members at the Westlakes Club rooms. Councillors agreed to the meeting, at which Westlakes put forward a strong case for leaving the Bureau at Teralba to be run by Westlakes ARC on behalf of the Division.

As a result of the meeting, Council decided to invite written submissions from any affiliated clubs and members willing and able to conduct the Bureau. This was announced on broadcasts and a letter was sent to all affiliated clubs. At the May Council meeting submissions were received from Westlakes ARC, 18 Newcastle amateurs supporting the Westlakes offer, one Sydney amateur and a list of 16 amateurs who had volunteered to sort cards at Atchison Street by writing their names on a list at Atchison Street. After much discussion, Council decided to appoint Doug Pearson VK2AVO as VK2 QSL Officer and to accept the offer from Westlakes to conduct the operations at their club rooms in York Street, Teralba. The address for the Bureau is: VK2 QSL Bureau, PO Box 73, Teralba, NSW 2284.

Westlakes Club can be contacted at any time on (049) 58 1588 and is open at the following times, with the exception of school holidays, Tuesdays to Fridays from 4 to 5 p.m., Tuesdays and Wednesdays from 6 to 11 p.m., and Saturdays from 1 to 8 p.m. There is a special insert into this edition of AR for NSW members concerning the QSL Bureau. If you have not received your insert, ring Divisional Office on (02) 43 5795 and one will be sent to you. We urge all members to send QSL information to the Bureau **IMMEDIATELY.** If no directions are received, the Bureau will presume you do not collect QSL cards and will return them to the sender.

Coffs Harbour and District Amateur Radio Club has been trying over the past few months to arrange local exams for their Novice candidates. The nearest exam centre is at Lismore, a round trip of over 400 km. Copies of Coffs Harbour Club's correspondence with DOC were received by Council at the May meeting. The Divisional President has written to DOC, Sydney, supporting their application for a local Novice exam at Coffs Harbour.

Council appointed the following members to the Repeater Committee for 1981-82: Chairman Tim Mills VK2ZTM, Michael Goard VK2ZNV, Paul Smith VK2ZSA, Gary Stern VK2ZBB, Jill Rowling VK2DLY and Henry Lundell VK2ZHE. Also appointed were the members of the Education Service Committee for 1981-82: State Supervisor Ken Hargreaves VK2AKH, Kurt Welzel VK2GQ, David Wilson VK2ZCA/NMW, Les Dickenson VK2DNS, Ian Hook, Ian O'Toole VK2ZIO and Martin Lansdown.

FOURTH CONFERENCE OF CLUBS

The 4th Conference of Clubs affiliated with the NSW Division was held on Sunday, 24th May, at Goulburn RSL Club. Barry White VK2AAB was elected as Chairman and Ross Wilson VK2BRC was elected as Secretary. Twelve affiliated clubs were represented at the Conference by the following delegates (the number in brackets is the vote allocated to each club based on one vote per 10 ordinary WIA members): Goulburn ARC, Barry Croker VK2DBA (1), Hornsby ADARC, Guy Fletcher VK2BBF (2), Illawarra ARS, Geoff Cuthbert VK2ZHU (7), Liverpool ADARC, Val Rochfort VK2BXR (4), Manly Warringah DRC, Ian Dodd VK2DLU (3), Mid South Coast ARC, Kevin Graham VK2BKG (7), Orange ARC, Ross Wilson VK2BRC (2), Parkes ADARC, Ross Wilson VK2BRC, South West ARS, John Eyles VK2BXD (3), Southern Highlands ARS, Frank Ritchie VK2VGX (1), Wagga ARC, Russ Read VK2AZR (3) and Westlakes ARC, David McKie VK2BWK (8). The delegates attending the Conference were representing 371 ordinary members of the NSW Division.

The meeting adopted Standing Orders for the conduct of Conferences which had been prepared, as directed by the second Conference, by Fred Herron VK2BHE and

Delegates and Observers at the Fourth Conference of Clubs:
1st Row: Henry VK2BUT, Barry VK2DBA, Barry VK2ZAG, Guy VK2BBF, Frank VK2VGX.
2nd Row: Barry VK2AAB, Keith VK2BKG, Val VK2BVR, John VK2KDJ, Milton VK2DCW, John VKQA (Sec. VK4).
3rd Row: Geoff VK2ZHU, Ian VK2DLU, Ray VK2ZME, Jeff VK2BYY, eKith VK2AKX, Russ VK2AZR.
4th Row: Ross VK2BRC, David VK2BWK, John VK2BXD, Jeff VK2KBK.

Harold Wright VK2AWH. A written report, prepared by Divisional President Athol Tilley VK2BAD, on actions taken by Council as a result of recommendations from the th rd Conference, was presented. The Conference decided to recommend changes to the frequency and time of the VK2 affiliated club net to Thursdays at 9 p.m. on 3600 kHz Motions on the agenda which were carried by the meeting were: (1) that a d rectory of affiliated clubs be included in al editions of the call book; (2) that Council investigate disposal of the Atchison Street property and replacing it with a property to include adequate facilities, including offices, QSL room, meeting room and other sections as required; (3) that a CW test at 14 w.p.m. be available for Australian amateurs wishing to obtain reciprocal licensing privileges overseas equivalent to their full Australian licence; (4) that "K" call licensees be permitted to use CW on 6m and up; (5) that consideration be given to making an award for items made as "home-brew" equipment; (6) that Counci apply for DOC permission for affiliated clubs who relay Divisional broadcasts on to 160m, 10m, 2m and 70 cm repeaters to conduct a 5 minute local broadcast immediately following the Divisional relay; (7) that the WIA press for an increase in the allowable deviation for FM on 10m from 3 kHz to 7.5 kHz, (8) that continued pressure be put on the DOC to allow use of the WARC bands; (9) that Australian contests be restricted to limited portions of the HF bands to enable normal social activities to be maintained by other amateurs; (10) that clubs running field days use common frequencies for fox hunts — AM pedestrian 144.3 MHz, FM mobile 146.55 MHz, HF mob.le 28.47 and 7.05 MHz, UHF mobile 439 MHz, (11) that John Moyle Field Day rules be altered to allow VHF contacts to be scored on a distance basis and to encourage portable operation; (12) that the WIA press for permission to establish FM repeaters in the band 29.5 to 29.7 MHz. There were naturally other motions submitted which were either lost or referred to the next Conference. All motions which were carried are now presented to Divisional Council as recommendations from the Conference.

The Chairman Barry VK2AAB presented the trophy for the 1981 John Moyle Memorial Field Day VK2 Inter Club Contest to John Eyles VK2BXD, who accepted it on behalf of the winning clubs, Griffith Amateur Radio Club, 24 Hour Open Section, 8389 points, and Oxley Region Amateur Radio Club, 6 Hour Phone Section, 758 points. The next Conference of Clubs will be hosted by Illawarra ARS on Sunday, 1st November next. The Secretary, Ross Wilson VK2BRC, kept comprehensive minutes of the fourth Conference, and any member who would like a copy is invited to send a large SASE to the Divisional Secretary, Box 123, St. Leonards 2065.

NEW CLUB AT DUBBO

On Wednesday, 27th May, the inaugural meeting of the Orange Region Amateur Radio Club was held at Orana Education Centre, Dubbo. Thirty-six interested persons attended, including 25 amateurs, from as far afield as Wongarbon, Wellington, Nyngan, Tottenham, Coonabarabran, Trangie, Gilgandra, Narromine, Trundle, Orange, Bathurst and of course Dubbo. Divisional Councillor Neville Wilde VK2DR and Alternate Federal Councillor Wally Watkins VK2DEW attended as WIA representatives. The meeting adopted a constitution for the Club and elected the following office-bearers: President John Hams VK2ZMT, Vice-President Peter Harrison VK2CAZ, Secretary Kathy Kinsey VK2VAS, Treasurer Peter Haywood VK2VEH, Publicity Officer Trudy Hansen, Eductalon Eric Brodrick VK2BEO, Repeater Chairman John McLean VK2KCE, and Cec Kearines VK2AKC The Club will shortly be applying for affiliation with the NSW Division and welcomes any new members and visitors to its meetings, which will probably be held each fourth Wednesday night. (Submitted by Nev VK2DR.)

COMING EVENTS

25th-26th July: Two day bike trials at Orange. Amateurs required for assistance with WICEN communications. Contact Peter VK2TK on (063) 65 9112. All NSW members and clubs are invited to submit news for inclusion in this column. Please send it to Box 123, St. Leonards 2065, to arrive two days before the end of the month prior to publication, e.g. by 29th July for September AR.

Susan Brown VK2BSB. ■

THE WA BULLETIN

VK6 DIVISIONAL NOTES

The Annual General Meeting of the VK6 Division was held in April and for the first time for many years sufficient nominations for Council were received. As provided for in our Constitution, members present at the meeting decided by ballot the positions of President and Vice-President of the Division. Mr. Bruce Hedland-Thomas VK6OO was appointed President, and Mr. Ross Greenaway VK6DA Vice-President. Our thanks to those who volunteered their services as Councillors and officers of the Division for the next twelve months.

Our 150th Anniversary Celebration Award results may by now have been published elsewhere, but just to keep the record straight here are the award winners:—

9M2LN 12432 points, VK6RS 6175 points, VK6XJ 4050 points, VK6SH 2298 points, VK6YL 1809 points, VK6HU 1728 points, VK6DC 1386 points, VK6YF, 1296 points, VK6NGX 522 points, OK2QX 358 points, VK6QK 357 points, VK7NFR 354 points, L40018 33435 points, GI5515 395 points.

WICEN

Members of WICEN are pressing on with the task of outfitting the caravan, several well attended working bee activities have been undertaken. A number of exercises have been planned for the near future. WICEN will also mount a display to mark the end of SES week later in the year. Some problems have been encountered with the destructive activities of some white cockatoos which have attacked the coaxial cable of the antenna system at SES Metro HQ.

INSTANT RADIO CLUBS

During the recent visit by some members of Council to a number of country centres, sufficient enthusiasm was generated at one stop-over point for the local fraternity to start a new district radio club. It is hoped to bring you more news of Mandurah and districts once they are more organised. Good luck, fellows, and please keep in touch.

It was announced at the May general meeting that the Minister for Local Government had overruled a decision by one of the local shires and one lucky amateur is now allowed to legally proceed with the erection of an antenna tower — nice to notch up a victory now and again.

MEMBERSHIP

Welcome aboard to those recently appointed to membership of the Division, and the best of luck to those who undertook the recent exams.

WIRELESS INSTITUTE OF AUSTRALIA WA DIVISION

COUNCIL REPORT FOR THE YEAR APRIL 1980 TO MARCH 1981

At first reminiscence it seemed as if it had been the kind of year when we had had to work hard in order to stand still. But perusal of the various minutes reveals a year with some modest achievement.

MEMBERSHIP

We have now passed the peak of the influx of new members coming from the ranks of CB. This means our increase in numbers and hence in income from fees will be small, perhaps 5 per cent per annum, and we shall have to budget wisely. We shall have to strive to make membership attractive in order to retain our present members. Total numbers at 19th January, 1981, were 662, an increase of 59 from about the same time last year.

FINANCE

The results of sound financial management by the Treasurer John VK6TU and all the Council, are shown in the audited balance sheet which has also been circulated.

The Federal Council decided to set their 1981 dues at $18 and no longer to carry pensioner members because of the large numbers involved. Divisional Council was forced to increase pensioner subscriptions to $18 but chose not to levy Divisional fees. Other subscriptions were increased to $24 full and $23 associate, which we trust will enable sufficient income without being swingeing.

MEETINGS

Meetings have continued to be held in Science House which, while sometimes cramped and not ideal, seems still to be our best compromise. Don Lorimer continues to do a splendid job catering for our supper now with a young offsider, Mark. One meeting when Don was away Mark did it all on his own, showing great initiative by commandeering the Institution of Engineers' tea. The fury of the caretaker was placated by much crossing of his palm with silver.

From October, for a trial period, we have had no lectures, only business meetings. From this we seem to have discovered that there are two distinct populations in the membership — those who want only meetings and those who also want lectures. It has been decided to re-introduce having a lecture every 2-3 months, but the exact format is still under discussion. Meanwhile, the attendance and interest at meetings has been very encouraging. There is one feature of meetings about which all members agree.

THE QSL BUREAU

The Bureau gives a service which is beyond criticism and continues to be soundly managed by Jim VK6RU now with his deputy Dave VK6NHD, for two cents per card. The manager's outdated 1980 international call books were donated to the newly formed ParaQuad Radio Club.

NEWS BROADCAST

The news broadcast has staggered through the year but never actually fallen, thanks to Barry VK6IF, Tony VK6NY and Norm VK6AUS. It attracts a faithful band of regular relay operators and we started a 15m relay which seems to be appreciated by listeners in the north-west. The news broadcast is very important, being almost the only service we provide to most country members. We should all do more to support it with news items and assistance. Country members might also note that news from them would also be welcomed. We now have a new high quality broadcast console featuring dual cassette decks, thanks largely to Vic VK6VK.

AWARDS AND PRESENTATIONS

Jack VK6JS, who had been "founder award manager", was forced to resign by pressure of work. The post was taken over by Nick VK6XI. September saw the 100th Zone 29 Award presented to VK6NYL and now 130 have been issued. The Worked All VK Call Areas Award is now available to VK operators under a revised set of rules as a result of pressure from this Division.

There are other awards which cannot be obtained by just sitting in front of a microphone or pounding a Morse key. Nor can they be applied for.

The 1980 AGM confirmed the election of Ross VK6DA to life membership. At the October meeting he was presented with the first of the new international style lapel badges.

During the year Adrian VK6CU was given the Outstanding Voluntary Service Award for his dedication to all aspects of repeater planning, building, installation and maintenance. At the end of the year Trevor VK6ZCB was given the Award for the same thing. You will recall that Will VK6UU was Amateur of the Year 1978 for his contribution to repeaters. If these repeater people should ever decide to take over the Institute we are due for a shake up. Or is there something about the Institute which stifles such enterprise? At Christmas, Dave VK6IW also was given the Outstanding Voluntary Services Award for his work as Membership Secretary. The Amateur of the Year 1980 was Peter 6HU in recognition of his organization of the radio aspects of the 12th Australian 4th Asian Pacific Jamboree and also many years of unrecognized work for this Institute and radio in Scouting.

The Christmas meeting, at which the awards were presented, was held in the Bell Room at the Herdsman Hotel and was probably the best ever, thanks mainly to the organization by Neil VK6NE. It turned out to be a bit of a benefit evening for the Schroeders, with Helen entertaining us and Norm VK6NS getting the best object in the mystery auction.

THE PATRON

During the year our patron the Governor, H.E. Sir Wallace Kyle, retired and the new Governor, H.E. Sir Richard Trewbridge, agreed to be our new patron. It is hoped that the meetings will presently vote to re-appoint him. The value of vice-regal patronage was demonstrated very convincingly last year over the AX6 call sign.

EQUIPMENT

There was not a lot of equipment for disposal during the year. Twenty-three 77 transceivers and eight 1675 transceivers were sold by ballot and some gear from the estate of the late respected Ron Hugo VK6KW was auctioned. One third of the Pye transceivers, donated by Philips TMC, was given to the Repeater Group on certain conditions. Finally, we disposed of 33,000 free QSL cards to 114 members. These were donated by the Perth Rotary Club as a result of Stan's VK6NDD idea and influence.

FEDERAL MATTERS

Michael Owen attended the April meeting and talked about the organization and outcome of WARC 79. He also met privately with some of the Council for beneficial discussions of some of our problems. Early in 1981 the Department of Communications' proposal for spectrum management, implementing the WARC decisions, were published. With few exceptions, they were acceptable to amateurs and the WIA. In August the Federal Body made a submission to the Enquiry into the Future of CB, stating, among other things, that there should be no common frequencies between the two services and there should be no lowering of the standard required to obtain an amateur licence as a way of providing spectrum space for CBers. May saw the long awaited publication of the new Handbook, and on Remembrance Day the Minister announced the granting of third party traffic privileges providing there was no financial gain to any of the parties. At one general meeting the membership voted that 50 cents per member per year be set aside towards WARC 99. The Council frankly regards this motion as over enthusiastic, nevertheless the implied $300 or so will be put aside each year. In January the battle for reduced licence fees for pensioners was finally lost. Council decided that the expense of sending a second alternate Federal Councillor to the Convention was not warranted unless he was an expert in some field which was to be a major topic. It offered to pay part of the expenses of Adrian VK6CU to attend to gain experience on behalf of the Repeater Group, but he had to withdraw due to pressure of studies. The DOC has reserved the call sign block WIA-WIZ for the Institute and this Division voted to exchange our permanently portable station call sign VK6AW1 for VK6WIA.

WICEN

WICEN has consolidated its relationship with the SES and has set up two radio rooms in metropolitan headquarters. The Council provided a beam and rotator. The portable repeater VK6REE is now available for emergencies. There have been numerous exercises and real emergencies involving WICEN. WICEN always provides communications for the tracker dogs when searching for missing persons. As exercises, WICEN provided the communications for the Neurological Foundation's Fun Run to Rottnest and the Scouts' SWAN-TIKI. The Council made available funds to purchase a 15 foot caravan, which is currently being fitted out as a mobile forward operations radio centre by the WICEN operators themselves.

REPEATER HILL

The Repeater Group seems to be enjoying a period of real enthusiasm and achievement. The portable repeater VK6REE has been made even more compact so that it will now fit into the boot of an ordinary car. It is a much travelled repeater, having been carried up Mt Toolbrunup by one intrepid group, from where it was heard back in Perth, and is at present being used to evaluate new sites for the Bunbury repeater. It was also used to test the new Perth channel 4 site, which is now being developed — the dreaded Tick Hill. As there is no mains power at Tick Hill, the group's wind generator will come into its own. The group is very pleased with the assistance it has been receiving in developing the new site. The Council is also pleased to assist this and other groups who do so much to further the achievements and improve the facilities of radio amateurs.

SLOW MORSE

The slow morse broadcasts have continued at high efficiency. Cyril VK6CR has not yet achieved his ambition of a team of 20 operators but has received some splendid testimonials from satisfied customers.

INTRUDER WATCH

The Intruder Watch, alas, is not well supported. There are only three stations apart from Dave VK6WT himself, who furnish regular reports. The Intruder Watch does achieve results and we must all resolve to support it.

EDUCATION

This Division does not run its own theory courses but those run under the auspices of the Technical Education Division and the Education Department are all lectured by Institute members. Those that spring to mind are Dave VK6WT, Mt Lawley Tech., Terry VK6ZLT, Fremantle Tech., Wayne VK6WD Carine Tech. Dick VK6LN Bunbury.

Council donated a set of Morse tapes to the Carine course.

The Division used the $500 from the Dick Smith Education Auction to establish a videotape library under the librarianship of Charlie VK6ZCK. It contains both educational and public relations films from the Federal videotape library.

SCOUTING

JOTA went off as usual with a number of new groups participating for the first time and VK6REE being activated. SWAN-TIKI was postponed due to the amoebic meningitis scare, but, when held, communications were provided by WICEN as an exercise.

BOOK SALES
Book sales under Chris VK6DV continue to be our main income apart from fees. The number of books sold are down, although clearly if country members could actually see the books stocked they would buy more. Council decided to continue the policy of rounding up book prices, at least partially to underwrite the $300 per year voted towards WARC 99. Chris is also the custodian of a copy of the World Radio and TV Handbook which may be borrowed between meetings and which was instituted as a service to SWLs.

CONTESTS
The contests this year brought forth no surprises, including our losing the RD contest again. This Division is taking action, through the Federal Convention, to try to ensure that we do not suffer again from unfair rules and an obdurate Federal Contest Manager.

GENERAL
The Amateur Advisory Committee in this Division has been discontinued by the DOC due to financial difficulties. Both the Department and the Division hope that it might be replaced by some kind of liaison meeting in office hours.

Ross VK6OA has asked for any historical photographs which members may wish to pass on, and has received some, notably from Jim VK6RU and John VK6BB. Ross looks like becoming a kind of unofficial historian. Maybe we should make it official!

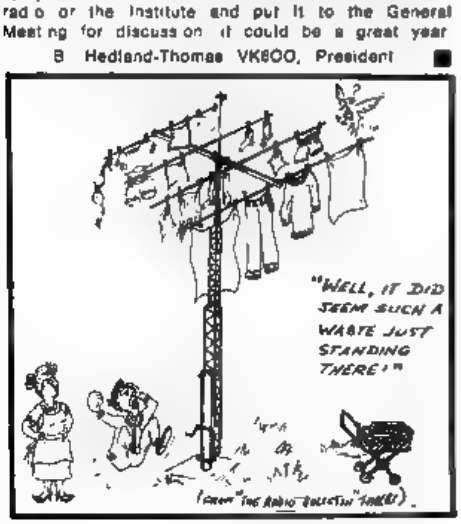
Individual members have donated a total of over $150, plus a good many hours of work, to the newly formed Paraquad Radio Club. The Council donated a peak reading power meter and SWR bridge worth slightly more than $100.

We have been offered a complete 10 metre beacon by the RSGB and are at present investigating what acceptance would entail, but we are enthusiastic about the idea of having our own beacon.

Early in April, six of the Councillors visited four centres in the south-west. Seventy-nine letters were sent to amateurs within a 50 mile radius of each centre and thirty-nine amateurs came to the various meetings. Discussions ranged widely but included the Federal Convention Agenda motions. The meetings provided a forum for the amateurs in each district to meet each other and Mandurah actually formed its radio club at the meeting. It is hoped that the new Council will plan other trips or possibly arrange to bring delegates from country radio clubs to Perth.

. . . AND IN CONCLUSION
The Council would like to thank everyone who has worked in any capacity for the Institute. Peter VK6HU once worked out that there are 86 different jobs in the Division. Of course they are not all equally demanding or responsible and not all are occupied. But the fact that the Division goes on means that someone is doing the majority of them. It is pleasant to record that we look like having a full Council next year for the first time in a few years. If during next year each member would think up just one idea for the betterment of amateur radio or the Institute and put it to the General Meeting for discussion it could be a great year.

B. Hedland-Thomas VK6OO, President ■



VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

JULY 1981
VHF/UHF BEACONS

Freq.	Call Sign	Location
28.230	ZL2MHF	Mt. Climie
28.260	VK5WI	Adelaide
28.262	VK2WI	Sydney
28.888	W6IRT	California
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty *
144.010	VK2WI	Sydney
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.555	VK5RSE	Mt. Gambier *
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty *
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

Some changes to the beacon list this month. YJ8PV is no longer operational, same applies to VK3RGI.

By the time you read this it is possible the Mt. Gambier beacon will be operating on 144.555. This is the frequency advised by VHFAC. Will be using 20 watts to a clover leaf, and completed as a South-East Radio Group project. This is great news for those in the Adelaide area as it will be the first two metre beacon outside of Adelaide capable of being heard on a continuous basis. VK6RTW in Albany is probably the most consistent, but this goes for weeks without being heard. VK3RTG is rarely ever heard, the next most possible could be VK3RMV at Hamilton when it gets going soon.

It is also possible by the time you read this that the Adelaide beacons will be off the air for a rebuild. They have been active for many years but are sadly in need of an overhaul and won't be able to carry on much longer. As always, it seems very few people are prepared to work on a beacon project, and we must thank Mark VK5AVQ for the work he has done so far in the rebuilding project and keeping the present beacons running, but he needs help now whilst doing his final year of studies. It would be nice to see some of those who have made good use of the beacons for DX contacts come forward at this time and lend a hand. I am prepared to help, who else? In the meantime we will have to rely on the VK5KK beacon on 52.150!

I have included some of the 28 MHz beacons again — this band is still very useful for setting up contacts on six metres, and I was reminded of this by VK5MX when he wrote with details of VK5WI on 28.260 which has been operating officially since 5/12/80. More details of this on the beacon information page, to be prepared for you all to read when those who have not so far written to me with details of their beacon do so!

The beacon does not include the great number of stations which have keyers, largely from overseas countries. Many stations can be heard on 28.885 advising others they have keyers operating on six metres on various frequencies. Of particular interest of late have been the stations from the southern portion of Africa who run keyers between 50.100 and 50.112, e.g. ZS6LN, ZS5TR, ZS3E, etc. 28.885 has certainly been an outstanding help in getting six metre contacts under way particularly in efforts to get 50 MHz stations to transmit or listen on 52 MHz.

THE SIX METRE SCENE
There certainly has been a slowing down of six metre activity but this is to be expected during late May and June. However, Joe KG6JDX looked into my shack at 2257Z on 26/4, the next day Jack ZS6LN copied at 0737Z on 50.107. Rene FO8DR made a happy day for me on 29/4

when at 2342Z I worked him on 52.008 on CW! Signals were 539 and it was the first time I had an opportunity to work Rene, as previous hearings had always been on 50 MHz. A prompt return for my QSL was gratefully received about 15/5. On 30/4 Jack ZS6LN again on 50 MHz, then on 2/5 a contact with KH6IAA at 0744Z 3/5 produced another new country for me when I first contacted VS5DX and had a cross-band contact, 28.885 to 50.100, at 0046Z. Signals continued to improve to allow me to finally work Graham split frequency, he on 50.100, and I on 52.040. Signals on 50 MHz were 5 x 9, on 52 MHz 5 x 4. Things went quiet for a while, while I was extra busy at work, then along came a couple of good contacts with Peter H44PT on 15/5 at 2335Z on 52.050, signals 5 x 7/8. ZS6LN again on 18/5 at 0746Z, also a number of JAs that day, worked a couple of JM1 stations for first time around 0800Z.

Lots of stations have been heard but not worked, due to being on 50 MHz, e.g. KH6EQI, KH6HI 2330Z on 27/4, 28/4, ZS2SS 1/5 W7KMA on 28/4 at 0020Z, XE1GE 2300Z on 11/5; VS5DX, 0030Z on 15/5, etc. Interesting to note ZS6LN and KH6IAA had a 5 x 9 contact both ways on 50 MHz on 19/5.

While still in VK5, John VK5ZBU was very pleased to receive his QSL for his contact with FO8DR on 29/4, this being an SSB contact and one of the few on SSB ever made to that station from VK5. He also reported on 20/5 at 1415Z when there seemed no activity on 6 metres, KH6EQI was copied by Col VK5RO via the long path, there being no sign of the signal direct.

SIX METRES SPANS INDIAN OCEAN

Congratulations to **Wayne VK6AM** for his contact with Phil ZS2SS on 52.005 at 0832Z, this being the first and only contact so far on 52 MHz to Africa. Signals were 5 x 2 on SSB after earlier making it on CW. **Wayne VK6WD** had a partial contact on 18/5 with ZS6LN on 52.005. Wayne had been following a contact crossband between VK5ZK and ZS6LN 28 to 50 MHz when he called Jack and had a contact 28 to 50.106. He then went up to 52.005 and received a reply on 28 MHz that he had been heard, so it's pretty close to another 50/52 MHz contact.

Contact with any portion of Africa from Australia has been a long time coming, but now that it has been made it will surely help to keep an interest at both ends of the pond for the future, and with the number of obviously eager stations at both ends, it is only a matter of time before others share in this interesting path. September/October may even be a more suitable period, one never knows until the time comes.

MELBOURNE NEWS

GM VK3AUI fills in on the Melbourne scene with advice that on 22/4 an opening to VS5 reported by VK3XQ, VK3ZUT and VK3AMQ, 23/4 VS5DX, WA4TNV/KL7 and VS6BE on 50.110, also JA8. On 24/4 VS5TX and VS5LH around 0100Z. Then on 25/4 KG6DX 50.110 519 at 0100 and 0150Z, VS5TX 50.100 at 0130Z, W6XJ 50.100 at 2241Z 219, KG6DX 50.110 at 2303Z 559, H44PT 52.010 at 2330Z worked VK3XQ, VK3AKK, VK3NM, VK3AUQ and others. 26/4 VS5DX worked by VK3NM at 0046Z split frequency 52.020/50.105, AH8A heard on 50.104 at 2209Z, 519, and at 2235Z, 539, JA1RJU 50.107 2224Z 4 x 2.

27/4 weak JA 52.050 0533Z 28/4 XE1TIS 0130Z to VK3ZTK, VK3KAG, VK3BQS, VK3OT. 30/4 VK)YBC reported H44PT, KG6DX, FO8DR and XE1GE all on 50 MHz from 2200 to 2359Z. At 2315Z Rod VK3YBC heard and taped a QSO on 50.110 between WB4AEG and N5BBT, signals to 5 x 7! He just had to sit and listen to them! 1/5 H44PT heard PY2AA, the beacon of PY2XB, on 50.060 at 579. Dick VK3ADR endeavoured to ring Brazil but no answers. The beacon was later heard in New Zealand. 3/5 VS5DX 50.110 at 0048Z. 11/5 VK3AMQ worked XE1GE at 2330Z. Also reported worked by VK3AMK, VK3KAG, VK3ZUJ and VK3AQR. 15/5 H44HIR 50.005 2312Z 559, 16/5 VS5DX 50.110 at 0031Z and worked by VK3AQR.

All the above activities have taken place through the continuing interference being experienced from Channel 0, which generally is much worse than the former transmitter despite low power. Thus the name CRUD O seems appropriate to the channel!

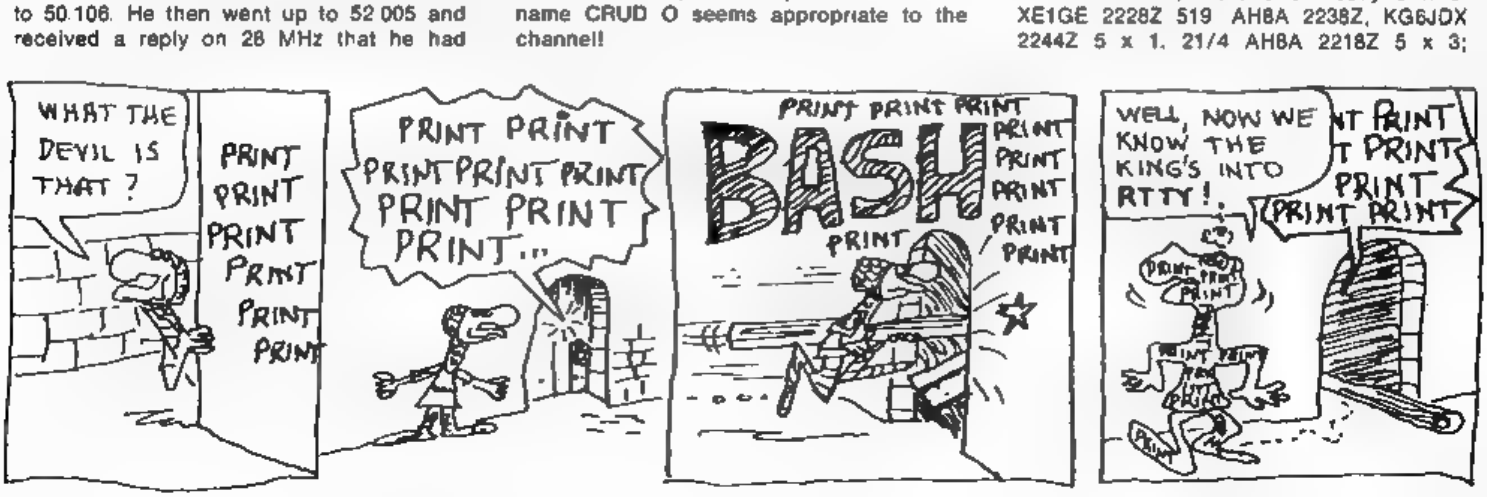
FROM TASMANIA

We don't often hear from the "Apple Isle", but a letter has appeared from **Ian VK7ZZ,** who reports Monday, 20th April, was a great day for 6 metres (it sure was!). At 0000Z heard VS6BE on 50.110, very strong, until Ian went to morning tea at 0105Z. (Really! Going to morning tea with DX around — my tip, have the tea brought to the shack, Ian!) Many JAs on 50 MHz, mainly CW and all 10 districts. At 0033Z worked VK6WD and at 0041Z VK6BV. These two stations worked with antenna peaking 20° west of north, and Ian has asked for an explanation why? Well, strange things happen on 6 metres, but the most likely is that as signals were only around S1 to S2 that you worked them via a form of backscatter, or in this case "side-scatter", and scatter signals can be received from anywhere. Scatter signals can be proved by turning the antenna direct to the station, when most times the signals will disappear entirely or become much weaker. Common paths for such effects exist in VK5 when you can be working into VK6 and also able to work VK4 on backscatter, with no sign of the VK4 on direct path.

Same day, from 1005Z, more JA until 1127Z on 50 and 52 MHz. Ian worked 15 stations. VK7ZJG, VK7AZ and VK7ZOT shared in these too. Ian reports that he had a contact with Yoshi JA2BZY, who advised on that day he had worked EL2FY and EL2AV in Liberia, as well as stations in Europe, and these Liberian contacts had given him WAC on 6 metres, with a total of 53 countries. A very outstanding effort. Thanks for writing, Ian.

NEW SOUTH WALES REPORT

Neville VK2QF from Hargraves, near Mudgee, sent a letter which arrived too late for inclusion last month in which he reports very exceptional openings to JA throughout January and February, continuing on to March with over 100 contacts on 15/3, finally going quiet from 18 to 31/3. KG6DX on 14/4 and 15/4 at 2315Z, 19/6 K6FV 529 at 2307Z for first W QSO, 2323Z WA6BYA 5 x 1. 20/4 VS6BE 519 at 0326Z on 50.110. VS5DX at 0335Z crossband to 28885, more JAs mostly 5 x 9. XE1GE 2228Z 519. AH8A 2238Z, KG6JDX 2244Z 5 x 1. 21/4 AH8A 2218Z 5 x 3;



From "The Propagator

23/4 VS5DX 0036Z 519; 24/4 VS5LH 0113Z 5 x 3; 25/4 VS5DX 0104Z 5 x 9, AH2K 0140Z 5 x 2, heard KHO Saipan briefly. 25/4 JA. 29/4 XE1GE 2322Z 599. FO8DR 2330Z 5 x 5. Thanks for writing, Neville.

BEACON BAND PLAN

As most of you will know there does exist a proposed band plan for the various beacons in Australia. It is a long time since the plan was published in "AR", so with overall news a bit scarce this month it might be the right time to outline the plan so that those in the process of upgrading their beacons can consider changing frequency to fit in with the plan. There are probably some anomalies in the arrangements, but overall there aren't a lot of objections to an ordered state of affairs. Primary beacons are those suggested for capital city or near capital city use, secondary beacons for areas outside the metropolitan area and/or the country areas, particularly as applied to the larger States, e.g. Queensland and Western Australia.

On 6 metres the primary beacons are listed for operation between 52.400 and 52.495 MHz, secondary beacons 52.300 and 52.395 MHz. The fourth figure indicates the State by call sign numbering, the third figure indicates a primary or secondary beacon. The same style of numbering applies on 2 metres and 70 cm. On 2 metres the primary beacons are 144.400 to 144.495; secondary beacons 144.500 to 144.595 MHz. The 70 cm beacon segment is located between 432.400 and 432.600 MHz.

To ensure adherance to the band plan the following table sets out the various frequencies for primary and secondary beacons for 6 and 2 metres.

Call Area	Primary		Secondary	
VK1	52.410	52.415	52.310	52.315
VK2	52.420	52.425	52.320	52.325
VK3	52.430	52.435	52.330	52.335
VK4	52.440	52.445	52.340	52.345
VK5	52.450	52.455	52.350	52.355
VK6	52.460	52.465	52.360	52.365
VK7	52.470	52.475	52.370	52.375
VK8	52.480	52.485	52.380	52.385
VK9	52.490	52.495	52.390	52.395
VK0	52.400	52.405	52.300	52.305
VK1	144.410	144.415	144.510	144.515
VK2	144.420	144.425	144.520	144.525
VK3	144.430	144.435	144.530	144.535
VK4	144.440	144.445	144.540	144.545
VK5	144.450	144.455	144.550	144.555
VK6	144.460	144.465	144.560	144.565
VK7	144.470	144.475	144.570	144.575
VK8	144.480	144.485	144.580	144.585
VK9	144.490	144.495	144.590	144.595
VK0	144.400	144.405	144.500	144.505

At a glance you will now be able to see whether your beacon complies with the suggested band plan. It appears at this date the only beacon fully complying in regard to frequency and location is VK3RGG, whilst VK7RST, VK2RAB, VK3RMV and VK4RTL, being non-metropolitan stations, are actually using a metropolitan segment. To follow the plan exactly these stations would need to be on 52.470, 52.325 (or 52.320), 52.335 and 52.340 respectively. On 2 metres the only beacon to conform is the new Mt. Gambier beacon on 144.555, being the frequency advised by the VHFAC. A good start!

The above information will be of value to those people who have written asking for details of beacon band plan frequencies. I haven't got full information in regard to band plan proposals for 70 cm and 23 cm so will leave this for the time being and pass this on when I am sure the information is correct.

While on the subject of beacons, I have received a letter from **Kevin VK3ANY,** who is the Publicity Officer for the Eastern Zone of the Victorian Division of the WIA, who confirms the VK3RGI beacon is not operational and has not been for some time whilst certain problems in regard to its final location are solved.

Peter says in reply to the comment recently of **Mike VK3ASQ** that the original beacon frequency of 144.162 was due to a junkbox crystal (!) but as it was only for test purposes it was not of great importance at the time, but when the beacon is finally re-installed it will be on a frequency in accordance with the band plan. Thanks for writing, Kevin, and putting the record straight.

MICROWAVES

Last month I ran a couple of paragraphs regarding 10 GHz operation, mostly in the UK. Here is a bit more to add to that, again from "Break-In" on the same subject:—

"Pat Hawker G3VA, in the World of Amateur Radio of 'Wireless World", March 1981, draws attention to the use of precipitation scattering as an effective mode of propagation on 10 GHz. Although, in general, tropospheric and precipitation are of less consequence for over-the-horizon SHF propagation than super-refraction and ducting, this is not true over very rough terraine or where there is local screening by hills.

"On the 10 GHz amateur band, Clive Elliot G8ADP, who lives in a heavily screened location in Hampshire, can work regularly over paths of up to 150 km by means of tropo scatter and is convinced that signals are quite often enhanced by rain scatter. Over a particularly difficult path of 40 km to G3JVL, located at sea level near Portsmouth, effective contacts are largely dependent on rain scatter, with signals maximum when there is heavy rain virtually overhead (drizzle is not sufficient). In such circumstances signals from G3JVL can often be received regardless of which direction G8ADP's aerial is pointing.

"He feels that this form of over-the-horizon propagation is still seldom recognised by amateurs, since much of the effort tends to be concentrated on portable operation where heavy rain is not welcome. Under normal, i.e. dry conditions, the signals from G3JVL are about —6 dBn (in a 2.5 kHz bandwidth), but in heavy rain may rise to 30 dBn, or about 5 to 16 dBn with the aerial pointing in other directions, including straight up.

TECHNICAL TIP

In the May 1981 "Propagator" was a comment from Dave VK2VAV/YKQ after hearing two stations on 2 metres discussing "cutting resonant half-wavelengths of coax" and trimming their coax for best results. He wasn't impressed, and said:—

"Let it be known throughout the land . . .

1. *If the antenna impedance equals the cable impedance which equals the output impedance of the transceiver, then the coax length will make no difference (except for a power loss in the cable).*
2. *If the transmission line is a multiple of half-wavelengths long then the impedance at the transceiver end of the cable will be exactly that of the load (the antenna), regardless of the characteristic impedance of the cable.*
3. *If the transmission line is an odd multiple of quarter-wavelengths long then the impedance at the transceiver end will be equal to the square of the line impedance, divided by the impedance of the load (antenna).*"

So there!

After all that I think it is time to close and get ready for the coming Mt. Gambier Convention on the June holiday weekend. Closing with the thought for the month: "Some of the new nations are discovering that a country is like a children's birthday party. It's easier to get one started than to keep it going peacefully."

73. The Voice in the Hills. ■

QSP

HOW TO KILL AN ORGANISATION

1. Don't come to meetings but if you do, come late
2. Find fault with the officers and other members, particularly on the air.
3. Never accept office, it is easier to criticise than to do things.
4. Nevertheless, get annoyed if you aren't appointed to a committee
5. If appointed, don't attend the committee meetings
6. When asked to express your opinion, say nothing but afterwards tell everyone how things should be done
7. When others roll up their sleeves to help, say the Institute is run by a clique.
8. Never write a magazine article, it's too much of a bore.
9. Hold back on your dues as long as possible, or don't pay at all
10. Don't bother about getting new members, but if you do, be sure they are moaners like yourself

This appeared in AR nearly 20 years ago. Perhaps an 11th rule could be added

11. Be sure to be a mine of misinformation on the air

"BUYING" QSL CARDS

ARRL's DXCC ethics rules have been strengthened considerably in a move against DX stations allegedly demanding payment before providing confirmation of a contact.—Ham Radio, March 1981. ■

YOU and DX

G (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

Without doubt it's been an interesting year of penning these articles, 12 months of somewhat surprising propagation, cycle 21 had peaked and was on its way down in July last year and many of us expected 10 metres to reflect the downturn — it didn't, in fact the last year showed 10 has still got a lot of life left in it. What else did the year hold? Some fine DXpeditions, some aborted ones, and without any question a distinct downturn in "on air" [illegible]

What will the next 12 months bring us? Someone prepared to write these notes — certainly at the present time no offers have been received!

What about some of the countries that have been "missing" for so long? CHINA — no I don't think we'll see activity for at least 18 months. I still believe, however, if any group of amateurs have a chance of launching a DXpedition there, then Australia would go very close to topping the list — has anyone tried?

ZA — Albania, well that's a different matter entirely — if there is going to be activity — and I believe there is — then expect it within the next six to eight months.

Closer to home, I felt XU may well have been activated this year, but from information filtering through, whilst many 'foreigners" are now working there, just getting in and out is one giant sized pile of red tape. No, write this one off for some considerable time yet.

FACT AND FICTION

Desecheo, KP4/D came off, well as I write plans were being firmed for the activation June 8th through 15th — hope you worked it. I gather it is very unlikely permission for another activation will be granted for a long time to come.

Likewise a station should be active from C31 — Andorra about now, relieving some of the pressure on the locals for this semi-rare country.

ZM7 — Tokelaus Island — yet another that was due to be activated during the past month.

Rumours of PY0 — St. Peter and Paul by Recife based amateurs. Finance as usual is the problem — If you feel like helping out with a contribution send same to PY7OD or PY7ZZ (they gave you Fernando de Noronha last year). September is the expected month, so don't delay.

KH5 — Palmyra — rumours are rife that landing permission was not obtained for the recent activation — here's hoping they're wrong!

3V8 — I do wish the rumour mongers would make up their mind October is now heavily tipped for some activity.

TY — Benin — much more activity should be heard from this semi-rare West African nation. The International DX Foundation are presently sending a complete set of equipment to a school there, so a permanent station (in addition to Bull TYA11) will soon be a reality.

IF THE CAP FITS . . .

Quotes of the month. The times stations, after sitting in a pile-up for hours, finally gets acknowledged — first transmission "I know there's a lot of stations calling you so I wonn't hold you long . . ." and a VK5 to HK0EHM — "you've got a lovely 5 x 5 signal HJ0HM — Charlie I think you said your name was . . .".

ON THE BANDS

10 Metres

Continues to provide some fine DX but subject to severe "wipe-outs" on a regular basis.

On phone VS5DG, FH8OM, HR3JJR, S79WHW, ZK1AR, ZK2BGD, HK0FBF, HK0EHM, ZS2MI (Marion Island), ZD7BW, 5V7HL, CN8EA, TU2IJ, TYA11, FM7WE, 7P8AC, ZS3MS, XT2AU, JT1AN, JT1KAI, EA9JV, VP1ME, 8R1J, D4BCD, 9N1MM, EL2AK, C5ACZ, YK1AA, KC4AAA and HT1JML were available and worked by many VKs — how did you fair?

On CW things were a little quieter but for the patient H44RW, JA8AQD/JD1, LU6AKG, UH8EAD, UL7GBR, 9M2OK and ZS6ANL/3D6 were fairly active.

15 Metres

From the list above you may have gathered I didn't get down this far. For the CW fanatic, however, there was plenty available — K7CA/CE3, EA6DD, FK8DM, HK0BKX, IS0ZFL, SV1NN, ZK2BGD, EL0AVX, UP2PAQ, JD1AMA, 8J3XPO and 8J5SUN; the last two no doubt would have pleased the prefix hunters.

20 Metres

On phone the usual pile of DX so commonplace on this band, one exception, however, was Ted 5V7HL, rotator control box now operational (well, intermittently), worked a few VKs long path; he hopes to give more VKs a chance when conditions permit.

On CW lots of activity — A35UW, FB8YH, FG7TE, FM7AV, FY7YE, VP2VEG, VP9CB, VS5RP, ZF2AA and 3B8DB were the choicest pickings.

40 Metres

Phone was a whole mess of JAs but CW gave much relief, particularly early in the morning toward Africa, 9X5AB, ZD8TC, ZD8RH, DJ6SI/6W8, TY9ER, with long path signals from FG7BR, KP4A, KV4AA workable from VK6, whilst for the 40 buffs east of here A4XIZ, CM2PE, FO8HA, LZ2KIM, Q1BIH/PJ2 and 8Q7BI were available at good strength.

80 Metres

Even the fanatics have given this band a miss, the occasional ZS and JA, but really not worth the time and effort.

Many thanks this month to the following contributors — Eric L3-0042, Peter VK6RZ and Joe VK2DPI. Thanks also to people who have during the past 12 months contributed and made this column possible. Your help and encouragement was much appreciated

Perhaps I may sign off with the following thought:

I wonder if there is one aspect of our hobby that people do not appreciate sufficiently (if at all)? It's unique. We, laymen, can communicate with persons world-wide, irrespective of race, colour, creed and "Iron Curtains". Our hobby — amateur radio — has done something which so far other human endeavours have failed to do — namely uniting people world-wide — long may we continue to do so.

QLS INFORMATION YOU MAY HAVE MISSED

ZK1AR — via AA6Z.
9G1RT — via KV7HV.
CN8EA — via CN8EI.
YK1AA — via PO Box 25, Damascus, Syria.
FH8OM — via DJ1TC
TYA11 — via ON5NT.
3E6AB — via PO Box 133, Mbabane, Swaziland
HK0EHM — via WD9DZV.
S79WHW — via PO Box 491, Mahe, Seychelles.
EA9JV — via PO Box 100, Melilla.
HP1XOG — via VK3VYP (SASE please).
VP1ME — via PO Box 387, Belize City, [illegible]
OY9R — via K2IJL.
NP4BN — via KP4EQG.
FO8EW — via Box 5498, Pirae, Tahiti.
FO8DF — via Box 5225, Pirae, Tahiti.
FO8HA — via Box 1119, Mahina, Tahiti.
VS6EY — via G3GKI.
ZK2BGD — via Box 37, Alofi, Niwe.
A35UW — via ZL2UW.
FB8YH — via F3KH.
FM7AV — via F6BFH.
FP0FSZ — via VO1FB.
HL9RW — via SN3QJ.
H44RW — via ZL1AMO.
JA8AQN/JD1 — via JA8JL.
KA2AA — via WA4TKR.
VP2VEG — via W0DVZ.
VU2BGS — via Box 153, Bangalore, India.
ZF2AA — via W8LUI.
4S7UD — via JE1QDQ.
4S7US — via DF2RG.
8Q7BI — via JH4RUG
VP2VHK — via N6ZV.
ZD8RH — via G4DBW.
9K2AH — via JA8BI
HP1XEK — via DL1HH
TL8CN — via W5RU.
N4ADJ/KH2 — via WB4CCT.
RG4C — via UK4CAA.
VP2MKU — via N6ST
YB8AEG — via WB2JOC.
YB0ACP/6 — via K6DLV.
DJ6SI/6W8 — via DJ6SI or DK9KD.
VE7AAZ/4U — via VE1VWV.
FM7CD — via F5VU
TY9ER — via DL8DC.
VQ9PF — via KA2EER.
HK0BKX — via WB4QFH.
BV2A — via JA2MTO.

VK0s IN ALPHABETICAL ORDER

AB — via VK2BRN.
AC — via VK3ZQK.
AE — via ??
AL — via ??
AP — via VK3VPJ after April, 1981.
AS — via VK3ZAT.
BA — via VK2ACI.
BC — via VK8VV.
CC — via VK2BCC.
DB — via 568 St. Kilda Road, Melbourne
GM — via VK6 Buro
GS — via VK2AOZ.
GW — via VK5GW.
HM — via W7PHO.
JC — via OZ8AE.
JM — via VK3BAF.
JS — via VK6NS.
KC — via VK4 Buro.
KH — via VK5WV.
KS — via VK3 Buro.
LD — via V2RS.
PK — via VK5 Buro.
RD — via ??
RM — via VK3AKK.
RP — via VK3YAP.
SF — via VK3SF.
SJ — via 568 St. Kilda Road, Melbourne.
SW — via VK4ATS.
TB — via VK3ADD.
VL — via VK3 Buro.
WR — via W7ZFY.
WW — via VK5XX.
XX — via WA7ABK.

Numerous requests for QSL information and numerous misdirected cards for VK9 and VK0 have lead me to obtain the following detailed information.—

VK9s IN ALPHABETICAL ORDER

BS — via W3HNK.
CCT — via VK5QX.
CGR — via VK5QX.
DIK — via DJ5CQ.
FV — via ??
JJ — via K9IL.
KK — via WA3HUE.
MR — via K9IL.
NA — via Norfolk Island.
NI — via Box 27, Norfolk Island.
NC — via Norfolk Island
NK — via W6EON.
NL — via PO Box 103, Norfolk Island.
NM — via EJ5CQ.
NNW — via Norfolk Island
NNI — via PO Box 27, Woolgoolga 2450.
NS — via PO Box 103, Norfolk Island.
NV — via OTC, La Perouse.
NYG — via VK6NE
RH — via Silent Key.
TR — via N2IT.
TV — via ??
XI — via VK6RU.
XS — via VK9NS.
XT — via VK3OT.
XW — via VK6RU.
YJ — via K9IL.
YK — via WA3HUP.
YN — via WA3HUP.
YR — via K9IL.
YS — via VK9NS.
YT — via VK3OT.
ZG — via VK6 Buro
ZM — via VK4ABW.
ZR — via VK2BJL.

AWARDS COLUMN

BILL VERRALL VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

BLUE MOUNTAINS AWARD

1. This award is available from the Blue Mountains Amateur Radio Club to all licensed amateur radio stations and short wave listeners.
2. Stations must work five (5) members of the Blue Mountains Amateur Radio Club under their own call. A member will only qualify once as a contact for the award.
3. The club station, using either VK2AUX or VK2NCM, will qualify as one contact if contacted only during the weekly net. However, the club station may be counted more than once if worked on nets in different weeks (up to the necessary five (5) contacts). The club net takes place on 3.540 MHz each Tuesday evening at 8.00 p.m. EST
4. Any mode and any authorised band will qualify. This applies regardless of the location of the applicant.
5. QSL cards are not required. Applicants must send a log extract containing all relevant information (date, time, frequency, mode, signal report and name and call sign of the station worked)

   SWLs must indicate both call signs of the stations heard in QSO and if the club net is claimed, one station involved in the net, not necessarily a club member
6. The cost of the award is $0.50 or two (2) IRCs.
7. Applications are to be made to The Secretary, **Blue Mountains Amateur Radio Club, PO Box 54, Springwood, NSW 2777.**
8. **DESCRIPTION:** The award is printed on cream card with all printing in black. It measures 180 mm x 255 mm

PELICAN AWARD

1. This award is available from the Sunshine Coast Amateur Radio Club to all licensed amateur radio stations.
2. Stations must obtain ten (10) points by working Sunshine Amateur Radio Club members. Overseas stations need only obtain five (5) points for qualification
3. Stations can be worked on any band using any authorised mode.
4. A contact with the club station VK4WIS counts as two (2) points.
5. QSL cards are not required. Applicants must send a log extract containing all relevant information as in 5 above.
6. The cost of the award is $2.00 or 10 IRCs.
7. Address all applications to the Awards Manager, **Sunshine Coast Amateur Radio Club, PO Box 80, Nambour, Qld., Aust. 4560.**
8. **DESCRIPTION:** The award is printed in two colours on good quality white matt paper. The title is in blue and black, the bird in black and surround blue. This award measures 305 mm x 230 mm

Good hunting.

TRY THIS

WITH THE
TECHNICAL EDITORS

A HOME BREW UHF SIGNAL GENERATOR

Bruce Mann VK3BM of Swan Hill

Suddenly one is involved in UHF and it is a new bal game Our farm and the district have gone for UHF CB in a big way, but unfortunately a number of these transceivers appear to be deaf On the assumption that the problem is in front end alignment and as the recommended signal generator would cost thousands of dollars I decided to build my own. After weeks of frustration there was finally a satisfactory result So it is hoped that the following will be of interest to the 432 MHz boys.

The first attempt was to put one of these sets with batteries and dummy load into an aluminium box. But even with cover screwed down tightly there was so much leakage that the S meter of a receiver 20 metres away went hard over At 50 metres distance the S meter averaged S7 but was wavering so much that attempts at alignment were aborted by violent movement of the meter whenever one put a hand near the set Obvious y the unshielded receiver was picking up the signal directly. The requirement then seemed to be to build a completely shielded signal generator so that the signal at required strength could be fed solely through the 52 ohm antenna terminal of the receiver. A box of much thicker p ated steel was obtained, the transceiver and batteries enclosed and leaks spotted by the use of a mini loop on a coax lead to a receiver aerial terminal. Despite every effort there remained far too much radiation So this first box was placed inside a similar but larger box But surpr singly radiat on, though less, was still at an acceptable level.

In desperation I tried the effect of raising the inner box from the floor of the larger one to a central position and supported if there by stuffing in screwed-up newspaper The result was much worse! But there was perhaps a clue — connect on between the boxes. A wire from the inner to the outer box greatly reduced radiation This was followed by earthing the outer to the inner box with eight well spaced set screws and this brought radiation to below the identifiable level.

ATTENUATION

Having successfully contained the 470 MHz signal within the shielding the problem now was to feed out this signal through a coaxial cable at any desired level from fractional microvolts to the full output of the 4 watt transmitter

I first tried conventional T pads using carbon resistors in diecast boxes. But I soon abandoned this because Belling-Lee UHF connectors, RG8CU coax and Eddystone diecast boxes all leaked 470 MHz like sieves.

Then one sleepless night there flashed into the failing memory facts from a prewar article on the then newly discovered wave guides. This pointed out that there is tremendous attenuation in a wave guide that is much undersized at a given frequency. Next morning crude experiments with a piece of ¾ inch copper tube and hairpin loops on coax showed that from full output (about 4 watts) down to practically zero required the separation of the loops within the tube of only about two inches. Further experiment showed that a pair of small discs, one fixed and one movable, were better than loops.

Problems were thus solved. All that remained was to tidy the haywire set-up, calibrate it and put it to use.

At this point I will mention some of the details that seem to have been necessary in the achievement of the satisfactory result —

The spot welded seams of the metal boxes had to be thoroughly soldered. The front panels of the boxes had to be tightly screwed down using a screw every inch, after having made certain that the facing flanges were true. Virtually every crack and hole had to be blocked with metal.

Each power lead out of the inner box had to pass through a feed-through capacitor and then through double-shielded wire having the shield braid earthed at each end. The necessary switches were covered by a small diecast box bolted to the rear of the front panel.

The RG58CU cable from the inner box to the front panel required a second copper braid over the outside and the braid had to be properly earthed.

The solid brass type of Acme UHF coax connector was necessary on the front panel The fixed attenuator disc of about ⅜ inch diameter on a short stem was plugged into the central contact of the Acme panel socket

The attenuator tube was about 6 inches of ¾ inch copper tube with the threaded sleeve from a coax connector soldered to one end. This screwed onto the panel Acme socket. As there was marginal leakage at this sleeve and also from the first inch or two of the tube, another tube was put over this one and fastened by a flange to the front panel.

The movable attenuator disc was soldered to the centre conductor of a metre of coax. Over the coax was fastened insulating bushing that centred the disc in the tube but allowed free movement back and forth. A lever was linked to the coax and the scale drawn and calibrated.

The 12 volt rechargeable batteries were placed in a diecast box above the set-up and connected via feed-through capacitors and double shielded wire as described earlier

IN USE

With the output cable from this signal generator plugged into the aerial terminal of a transceiver front end alignment was a simple matter but unfortunately this did not fix the deafness problem. Experiments proved that the receivers, to achieve good results, had to be tuned on a steady signal through their usual antenna and feedline set-up.

So we built a small ground plane antenna and connected the signal generator to it, and found some interesting effects. It was observed as in our first experiment that under some conditions too much signal was being picked up directly by the unshielded receiver rather than through the antenna terminal. This rendered alignment impossible, for to put a hand near the set would violently swing the S meter reading This problem was usually overcome by careful placement of the generator and ground plane antenna. In general the best position for these was on the ground closer to the receiving antenna than the receiver, if possible, with a clear path between the two antennas. Severe movement of the S meter will be caused by moving people, foliage, etc., in the path of the signal. Even trees not in the direct line, but waving in the wind, have caused trouble through reflections. Alignment in situ in most cases made a dramatic improvement in results.

432 MHz

The foregoing of course referred to experiments on 470 MHz CB but surely there are lessons there for 432 MHz? Text books invariably stress the importance of antenna coupling in a UHF receiver.

I was astonished at the simplicity and effectiveness of the copper tube attenuator. It seems to me that it would be quite feasible to make an effective signal generator for 432 MHz using this principle.

How about a simple miniature crystal controlled transmitter built on a strip of Vero board comp ete with battery? This could be slid down a copper tube (say 2 inch diameter) and the output taken off from a coax connector on a closed end, or alternatively on a support pushed well down the tube Output could be varied by sliding the transmitter thus varying the spacing between a disc on Tx output and a disc on the coax.

Anybody care to try it?

TECH. EDITOR'S NOTE

Some years ago 73 Magazine carried an article discribing a signal generator similar to the one suggested by Bruce The waveguide-below-cutoff attenuator can be used to achieve great precision in measurements. It is used in commercial attenuator calibrators for example.

If you build the above suggested generator the mini-transmitter will need to be held on a non-conducting rod if elaborate screening is to be avoided A noise generator with a high output could be used instead of the mini-transmitter to allow testing of many frequencies. (VK3APW.) ■

THE PARASOL ANTENNA: A Cheap Tribander

The information presented here was provided by Dick VK3SV.

Quite a number of amateurs have now built this antenna with claims of 5 dB gain, 18 dB front-to-back ratio and 37 dB side rejection being made for 15m operation. Some constructors dip the loops and adjust the length for resonance at favourite frequencies but Dick cut his to nominal size and used an ATU.

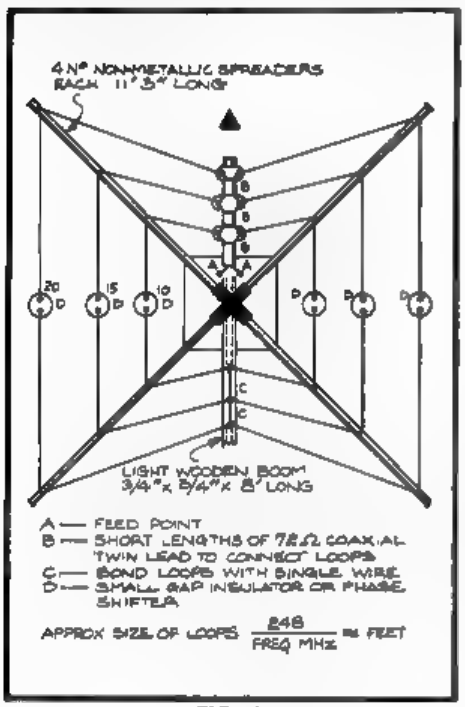


FIG. 1

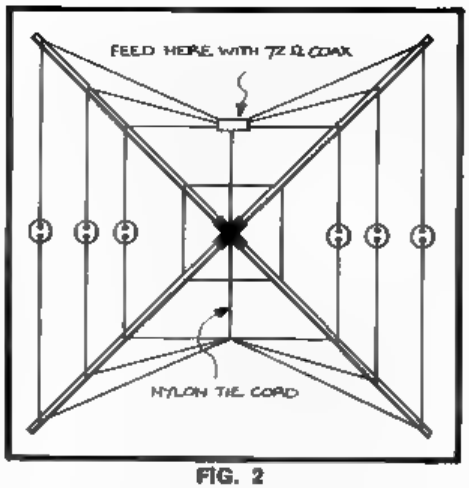


FIG. 2

The original VK2ABQ antenna was described in Electronics Australia, October 1973. Fig. 1 shows a modified version which reduces the element spacing slightly at the current maxima. This is done by pulling these points in towards the centre. An improvement in front-to-back ratio is claimed. Coat buttons were used for insulators in the original system. Egg insulators are suggested.

A simplified construction is shown in Fig. 2. In both cases the antenna is drawn as seen from above.

Figs. 3 and 4 show the construction used by Dick in building his Parasol.

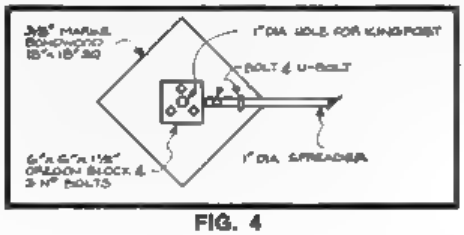


FIG. 4

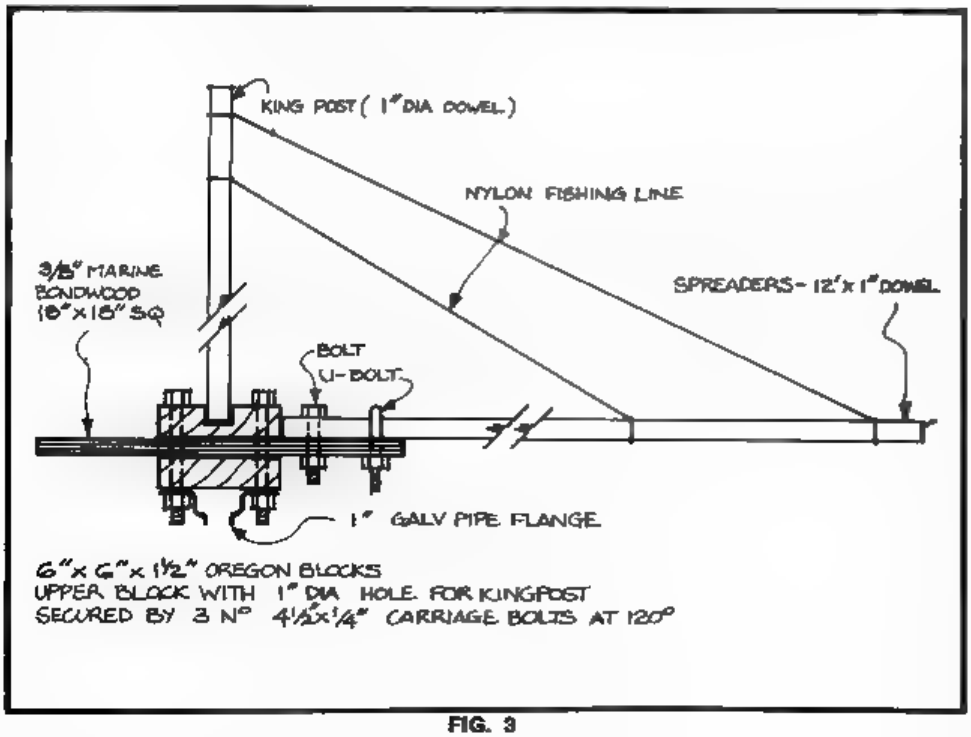


FIG. 3

THE BOW-TIE MONOBANDER

For the person who prefers a mono-bander Fred VK2ABQ has devised the Mono-band Bow-tie. This is shown in Fig 5. A gain of 6 dB and a front-to-back ratio of 20 dB are claimed. Details again via Dick VK3SV.

The information given in Figs 1 and 5 was previously published in Radio Communications, probably during 1979.—VK3AFW. ■

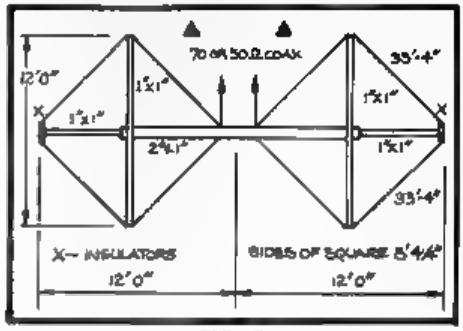


FIG. 5

INTERNATIONAL NEWS

NEW BANDS

On a unanimous vote the delegates at the IARU Region 2 Conference held in Lima from 13th to 17th October, 1980 supported these criteria for the use of the new (shared, secondary) 10 MHz band when it becomes available (details in brief):—

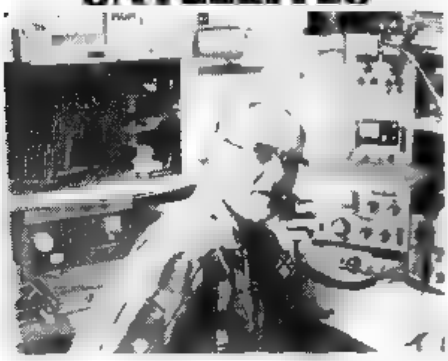
- Telegraph only — RTTY permitted only in top 10 kHz;
- No competitions or contests, no points or awards;
- Operations only permitted to the higher classes of licence in each country;
- Max power 250W;
- All R2 societies to request their administrations to adopt these criteria.

In relation to the 18 and 24 MHz bands the delegates, recognising that it may be some years before these two new exclusive bands become available, endorsed the principle of regionwide uniformity in the subdivision by transmission modes. Without specifying precise sub-band allocations it was agreed that the lower portion of each band would be used for CW, RTTY in a relatively narrower segment at the upper end of the CW band and the remainder for radiotelephony and SSTV.—Region 2 News, January 1981

PHILATELY

The Region 2 News contains details of new amateur radio postage stamps bringing the world total to 19. The new ones are a $700 Argentina stamp carrying the words "Homage to the Radio Amateurs", a 7c "Isla Catalina" Dominican Republic stamp, a Polish postal card commemorating the 50th anniversary of PZK and a Djibouti 250F stamp honouring amateur radio to come out on 26th June (first day covers from ARD Box 215, Djibouti) ■

AMATEUR SATELLITES



R C Arnold VK3ZBB

AMSAT AUSTRALIA

At the recent Federal Convention it was agreed that our satellite group would, in future, be known as AMSAT AUSTRALIA under the auspices of the WIA. This will be a significant step forward in our relations with other international AMSAT bodies and in fact will bring us in line with the rest of the world. It is to be hoped that this will not reflect adversely on the name of its predecessor, OSCAR 5, which, in turn, led to the great success of OSCARS 6, 7 and 8.

AMSAT DONATION

Also at the Federal Convention it was agreed that the Wireless Institute would make a donation of $US500 towards the construction of Phase IIIB satellite; I am sure that all members of WIA who are interested in satellites will be grateful for this generous gesture.

SATELLITE OPERATIONS

Both satellites continue to operate reasonably well, although AO7 has been very noisy during the past month or so. As I indicated recently, it is possible that AO7 is travelling on the fringe of the sun's illumination and this is causing a reduction in the voltage to the transmitters. This situation will probably continue to the end of July. I have reports from time to time that AO8 is missing but although I do not check every orbit my own records show that it has always appeared on time but tends to disappear halfway through the pass, probably due to antenna shading.

"MOTORVATION"

Courtesy AMSAT Satellite Report.

The liquid fuel kick motor option discussed in ASR No. 4, April 6, 1981, is again in the news. AMSAT DL has received the assurance of the West German manufacturer that the motor will be made available to AMSAT. Coincidentally, news from W3GEY is that we have obtained a solid fuel kick motor donation as well. AMSAT officials were obviously delighted at this turn of events because of all the satellite sub-systems aboard Phase III, the kick motor was least likely to be fabricated in-house. As it stands, it is a bolt-on subsystem on which the entire mission critically depends.

Does the sudden confluence of kick-motors itself cause a problem for AMSAT? Assuming that the required plumbing can be obtained for the liquid motor, the availability of one of each breed (liquid vs. solid) meshes rather well with other long-term planning scenarios. For example, as is well known, Phase IIIB is due to be launched mid-1982 from the European Space Agency's Kourou, French Guiana facility by an Ariane rocket. Since the primary mission of the Ariane calls for insertion of the payloads into an orbit inclined 7° to the equator, AMSAT will need more kick motor energy on Phase IIIB than would have been needed on Phase IIIA. That is because the transfer ellipse on Ariane LO2 which carried Phase IIIA was designed for 17° inclination. From the transfer ellipse of 7° or 17°, AMSAT would very much like to attain an inclination in the 60 to 63° range. (See ASR No. 4 for the underpinning rationale.) Thus, since more energy is needed for Phase IIIB to go from 7° to 60° plus, it is fortuitous to have the liquid option.

On the other hand, substantially less is known about Phase IIIC and its "ride". AMSAT is presently diligently working to secure a ride for Phase IIIC. With a renewed interest in the United States in continuing the larger launch vehicles well into the 80s, the possibility of obtaining a US ride is somewhat brighter than, say, a year or two ago. In the case of a US launch, however, the solid fuel motor will do quite nicely since the transfer ellipse of a typical heavyweight US launch has a higher inclination. That means less energy must be carried aboard Phase IIIC to attain a usable orbit. And that means the solid fuel rocket is quite satisfactory.

If you imagine AMSAT's future project planning as a score card or the like, with a number of boxes to be checked-off before the mission can be accomplished, then the score cards for both Phase IIIB and IIIC have several very important boxes checked-off (albeit in pencil for the moment).

SPACE SHUTTLE

From Mode J Newsletter, courtesy Larry W9MXC.

Many questions are being asked WHY isn't AMSAT investigating launch opportunities on the space shuttle? NO good answer has been given. One source said he was told by an AMSAT representative AMSAT does not have the expertise to provide an (IUS) Intermediate Upper Stage, which would carry the satellite from the point it would be kicked out of the shuttle to the desired orbit we would require. I can't believe this is acceptable, out of our vast technical pool do you mean to tell me we don't have the needed experts, or is it we've not explored this avenue? We should get our FOOT IN THE DOOR with "NASA" and try to secure a possible ride, then get our heads together and if necessary develop the expertise (that is if we don't already have it). No experts — BULL — "CAN'T NEVER COULD DO ANYTHING" Let's get in the Ball Park, fellows, we may not come to bat but we've at least made a showing.

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
JULY 1981						
4	30329	0112	98	16969	002	62
11	30417	0147	107	17067	0034	70
18	30504	0027	87	17165	0107	79
25	30592	0102	96	17263	0140	87
AUGUST 1981						
1	30680	0136	105	17630	0029	69

OSCAR 7 operates on Mode A and Mode B on alternate days subject to some unpredicted variation.

OSCAR 8 operates on Mode A Monday to Thursday, Mode J Saturday and Sunday. Modes A and J Tuesday and Friday experimental use Wednesday.

SPACECRAFT FREQUENCIES

Mode A Uplink 145.850-145.950 MHz, Downlink 29.400-29.500 MHz.

Mode B Uplink 432.125-432.175 MHz; Downlink 145.975-145.925 MHz.

Mode J Uplink 145.900-146.000 MHz, Downlink 435.200-435.100 MHz. ■

WICEN

R. G. HENDERSON
Federal WICEN Co-Ordinator

My column this month follows up a few matters raised at the recent Federal Convention.

CALLING FREQUENCIES

The Convention confirmed the proposed 15 and 10 metre WICEN frequencies, so the HF net frequency list is:—

3600 kHz, 7050 kHz, 14100 kHz, 21190 kHz, 28450 kHz.

Experience over several years has indicated that, because of our wide range of available frequencies, it is desirable to have set calling frequencies, again practice has shown that these need not be slavishly adhered to as network working frequencies, indeed some States use different frequencies for their weekly reporting and training nets.

On VHF and UHF the local repeater channels will obviously be preferred, but note should be taken of the declared WICEN repeater allocations established in some States, for example, 147.150/146.550 MHz (VK2) and 433.65/438.65 MHz (VK3).

DOC REGULATIONS

Following the granting of third party traffic privileges the Handbook is somewhat out of date regarding WICEN exercises. The current situation is that we should advise local radio branches of exercises before the event (as distinct from seeking approval). This action has several advantages for third party conditions must still be satisfied, we want them informed should we suffer deliberate interference and it's a courtesy that contributes to our contact and liaison and shows we are acting in a reasonable manner. Emergency operations regulations are monitored by our representatives at the joint DOC/WIA meetings.

THE NAME WICEN

The name WICEN came in for some discussion at the Convention for it was

pointed out that it does not mention amateur radio communications and means little to the man in the street, or to the disaster authorities or SES unless they have been well briefed Some co-ordinators may recall that the possibility of a name change was discussed about three years ago.

The British use the mnemonic RAYNET (Radio Amateurs' Emergency Network) to describe the RSGB emergency communications organization which may exercise at civic activities within certain guidelines.

In the USA the Amateur Radio Emergency Service (ARES) and the National Traffic System (NTS) are sponsored by the ARRL and Radio Amateur Civ l Emergency Services (RACES) is sponsored by the Federal Emergency Management Agency. ARES can operate in "non-declared emergencies", such as civic service, whereas RACES operations are authorized by the FCC upon request from disaster agencies.

Those readers familiar with WICEN will appreciate that we operate in reasonably unrestricted circumstances, we can take part in training exercises, civic services exercises and may be called out by the disaster agencies, viz., NDO, SES or the police.

Personally I see merit in a descriptive title, but also recognize the need for some continuity or bridging with our existing title, so what do you think of this?

"WICEN — Amateur Radio Emergency Communications, shortened to WICEN-AREC", with the ability to drop the "WICEN" prefix at a later date if so authorised. But please do not forget that "WICEN" in full describes our historical origin

MESSAGE FORMS

The need for a message form for amateur radio third party messages was raised recently (AM May 1981) and the Convention considered that it should follow the general style of the existing SES message form (as adopted by WICEN), with the non-applicable boxes omitted

This is a sensible and natural progression as only confusion would result if a completely different layout were used. I hope to reproduce the form in next month's column. ■

INTRUDER WATCH

Graeme Fuller VK3NXI

The campaign against the OHR signal nicknamed the "Woodpecker" has made it necessary for some extensive changes in the reporting of Intruders for the Intruder Watch.

The changes really relate to concentrating more on specific cases of harmful interference encountered in your observations instead of just scanning the bands up and down and reporting everything you hear.

To get our Admin stration to take notice of our reports and act upon them we have to be more precise in our reporting

Here is a sample report which lays out this concept. Although the sample is typed that is not obligatory so long as the report is legible, well spaced and with as much detail as poss.b.e

The words "harmful interference" are mandatory as they carry more weight with our Department than any other

Also the specification of the interfering signal causing the interference to you or to some stations heard underneath that interference is important

A bearing is helpful, too, specifying whether it is long or short path

Suitable log sheets, together with a summary, will be forwarded by me to our Department for action.

However, the above does not mean that you should discontinue altogether scanning the bands and reporting what you hear, but when you do report that type of observation put it on a separate sheet from that of specific interfering signals. General observations are helpful for summary purposes because the monthly summaries are forwarded to the Headquarters IARU Monitoring Service in England and to the USA, where they are subsequently forwarded to the FCC, both of whom compare them with observations from other countries.

We must now congratulate Fred VK1MM, Bill VK2PFH, Frank VK3VAV and Frank VK7BC on their appointment as IW Co-ordinators. Hereunder is a list of the other Australian Co-ordinators —

VK4 — Gordon VK4KAL, VK5 — Leith VK5LG, VK6 — David VK6WT, VK8 — Henry VK8HA. ■

LEGEND
'M' = Measured
'E' = Estimated

WIRELESS INSTITUTE OF AUSTRALIA INTRUDER WATCH SERVICE
SAMPLE
OBSERVER'S LOG SHEET

MONTH

NAME AND CALLSIGN

ADDRESS

RECEIVER Drake TR7 general coverage. AERIAL(S) [illegible].

DATE	TIME GMT	FREQUENCY IN kHz M OR E	CALLSIGN IF HEARD	MODE	RST	BEARING M OR E DEGREES	DETAILS OF TRAFFIC IF KNOWN AND ANY OTHER INFORMATION
07	0530-40	21151	-	P9	5 9	130 long path	OHR pulse signal "woodpecker" covered VK3XB and several novices from USA intermittently causing them to have to close down.
12	1030	14072	-	P9	5 9	330	OHR signal caused harmful interference to VE1BBK and W3PA. Heard W3PA say "sorry Ron but QRM from the woodpecker here".
12	1057-1110	14071	-	P9	5 9	330	OHR caused harmful interference to me VK3LC in contact with W2KBM who remarked "can hear the woodpecker here which makes copy hard".
12	1142-54	14072	-	P9	5 9	330	OHR caused harmful interference to me VK3LC in contact with WB5NUK who remarked "sounds likeaa commercial pulse over you"
14	0524-35	21172	-	P9	5 9	130 Long path	OHR caused harmful interference to me VK3LC in contact with VE7FHF who remarked "woodpecker here Russians have agreements but don't seem to keep them
14	0535-0602	21172	-	P9	5 9	130	OHR caused harmful interference to me VK3LC in contact with DJ6HE who remarked " I can hear the woodpecker here now". The interfering signal kept on for quite a long time after my contact.
18	0745-0800	14265	-	P9	5 9	130	OHR caused harmful interference to me VK3LC and VK3XB in contact with G5XB and G3KSH our weekly sked for Intruder watch.

AROUND THE TRADE

NEW ANTENNA

Chirnside Electronics have recently released an additional tri-band beam to their already extensive range of mono and multi-band antennas.

The new addition is the model CE-35DX, which features 20-15-10m operation with the use of traps for automatic band selection.

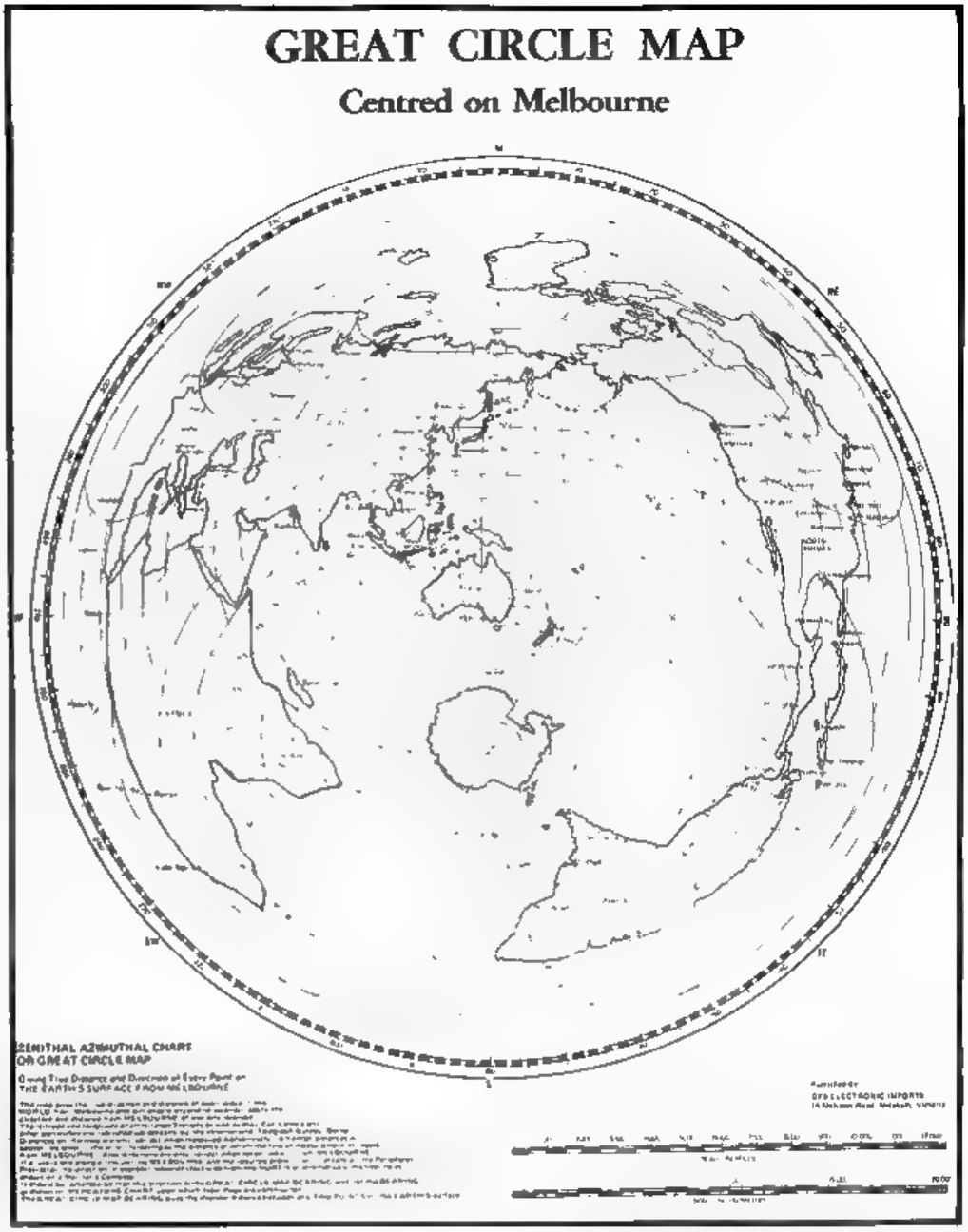
Unlike the already very successful model CE-35, which features 3 elements on each band, the model CE-35DX features 3 elements on 20m, 3 elements on 15m and 4 elements on 10m, all mounted on a 6m boom (19 ft. 3 in.). The average gain is 9.5 dB and the average F/B ratio is 25 dB and is capable of handling up to 2 kW PEP.

Like all other Chirnside antennas, this model also features heavy duty elements made of high grade aluminium. Elements with traps in them start at 30 mm or 25 mm in diameter, depending on the amount of traps used. The two elements without traps start at 19 mm and taper down to 12 mm and are neatly finished with plastic end caps on all elements. Stainless steel compression clamps are used at the adjustable joining sections for strength and durability and also allow for easy adjustment where necessary. The assembly of this antenna is made very easy with the use of a colour code system, as featured throughout the existing range of their antennas. This antenna (CE-35DX), like all Chirnside's other antennas is neatly packed in a heavy duty carton which measures 2.25m x 15m x 15m (7 ft. 6 in. x 6 ft. x 6 ft.). The approximate weight of the antenna when packed is 24 kg. The recommended retail price of the CE-35DX is $299, which appears to be good value for money.

Chirnside antennas are now available from some interstate and country dealers. Contact Chirnside to find your nearest dealer.

For further details contact Chirnside Electronics, 26 Edwards Road, Chirnside Park, Lilydale, Vic. 3166. Ph. (03) 726 7353. ■

CW Electronics of Brisbane has changed premises from their old location in Tarragindi to 416 Logan Road (Pacific Highway), Stones Corner (next door to the post office). CW's managing director, Brian Beamish, said that the move will offer more convenience to clients and "permit us to demonstrate and display our goods and services to the best advantage. This move demonstrates our growth, which at some stages has even surprised me," stated Mr Beamish, "whereas many companies in this area, especially in radio, are pulling in their horns, we see this as a prime opportunity to expand both our goods and services to the enthusiast." ■



GREAT CIRCLE MAP IN PRINT AGAIN

GFS Electronics Imports of Mitcham, Victorian, advise that they have available, once again, their Melbourne centred Great Circle Map, which has already proven popular with many amateurs around the country.

The Great Circle Map, known as a Zenithal Azimuthal Chart, gives its user the true direction and distance from Melbourne to every point on the earth's surface thus enabling the accurate directing of beam type antennas. Size of the map is 43 x 32 cm. It may also be used, with reduced accuracy from any city in Australia.

Price of the map, including postage, is $2 and it may be obtained from GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Ph. (03) 873 3939. ■

1981 FOREIGN AND UNITED STATES CALL BOOKS NOW AVAILABLE

The 1981 Foreign Listings Radio Amateur Call Book now has over 360,000 listings, while the 1981 United States Call Book has 398,829 US radio amateurs listed. As well both call books boast a wealth of other useful information such as QSL Managers, World Call Prefixes, International Postal Information, Standard Time Charts, World QSL Bureaux, plus others.

Both of these Call Books are now available from GFS Electronic Imports, Mitcham, Victoria. GFS also have the 1981 print of the Radio Amateurs' Kit of Maps, which consists of three maps plus an atlas. All maps and the atlas are printed in four colours with zones and call prefixes marked.

For more details contact GFS Electronic Imports, 15 McKeon Road, Mitcham 3132. Ph. (03) 873 3939. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St, Launceston, Tasmania 7250

Recently I came across a station transmitting an English/Chinese language lesson while I was scanning across the 48 metre band. On the night I heard it, signals were very clear, and the lesson was from a primer with the story of Peter and the Wolf.

Now the only Chinese station listed as being on this frequency in WRTH 81 is the People's Broadcasting Station in the Xinjiang Autonomous Region. This part of China is located in the remote north-west area, close to both the Soviet and Mongolian borders. So it was really with some trepidation that I submitted an English language report to the station.

I was certainly surprised and excited to receive their reply exactly one month later. Unfortunately, it was written in the Chinese alphabetic script! So it was another three weeks or so before I could obtain an accurate translation of the letter and confirmation card. The number of Chinese-Australians who can neither read nor converse in their ancestral tongue really surprised me. They were embarrassed and so I was as well for putting them under pressure. The Chinese script is not made up of letters or symbols as the European or Arabic alphabets from which our alphabet has been constructed, but is made up of ideograms. That is, one symbol represents an idea rather than a letter, which sounds much simpler if people cannot understand each other's speech, but comprehend the ideogrammatic symbols. Unfortunately, there are seven to eight thousand symbols to be learnt, making it extremely complex. The Chinese themselves have tried to standardize is to 770 symbols, whilst the Japanese have tried to simplify it down to 63, and in effect created another script.

When it was translated, they confirmed that I had indeed heard their station. This was possible because the subject matter in the lesson I mentioned earlier, as well as several key sentences and words in English, were enunciated clearly and precisely, spelling out the words letter by letter. This did make it easier to compile a report on the broadcast.

Urumchi, where the station is located, is the capital of the vast Xinjiang (or Sinkiang as we were taught at school many years ago) Autonomous Region. Its population is made up principally of Uighur and Kazak tribespeople and nomadic Mongolians. The Han (Chinese) are in the minority. There is also a close relationship with the fierce hill people to the south and west. Also of significance, that there are large Uighur and Kazak populations not far away just across the border in the USSR.

Because of its strategic position close to the Soviet and Mongolian borders, there is a large transmitting centre relaying Foreign Service programmes from Beijing (Peking) to these areas. However, it appears that 6120 kHz is used for domestic service programmes in Chinese. This vast region with a widely scattered but mobile listening audience needs several channels to cover the area. Not only do they broadcast in Chinese, they also carry Uighur and Mongol. They also forwarded me copies of the programme guides in the Kazak and Mongol scripts. I somehow think it unlikely that there would be anyone in Australia able to read or translate them. Interestingly, the Mongol script goes from bottom to top, left to right. The Kazak one is very similar to Arabic and Persian. This isn't surprising as they are predominantly Islamic. It reads from top to bottom, but right to left.

If you are interested in attempting to catch this station, listen on 6120 kHz at approximately 1300 GMT, when they broadcast the English lessons. The station informs me also that 4735 kHz is allocated for Kazak programmes, with an additional channel on 3960 for their Chinese broadcasts. Other frequencies in use are 2330, 3609 and 3738 kHz, but I am unable to state what language they employ.

Recently I received back a QSL card from Radio Nederland in Hilversum on their 9770 kHz transmitter located at Bonaire. It came back in exactly 10 days compared to exactly four months for a report from the BBC in London. So what is significant in that? Nothing really, except that I know of several SWLs who still are awaiting confirmation from these stations. I do not think it is the fault of the stations concerned, but the bad quality of submitted reports.

It is certainly not sufficient just to state that you observed the particular station on a given frequency at x hours local time and that you would like a QSL card, as in one case I heard of lately. Reports such as these are destined for sure straight for the waste paper bin.

Set out your reports and observations neatly and legibly, stating the frequency in kilohertz, with all times in Co-ordinated Universal Time/GMT, it would aid verification if the local time at the station is included as well, this as well as 15 to 30 minutes of programme information, signal strength (preferably using the Sinpo System), etc. Where stations don't normally acknowledge listener's reports, they as a rule reply to the comments about their programmes for it indicates to them that people are listening to them. Audience feedback is very important to their planning and presentation.

With small stations on a limited budget, it helps if you include return postage in the form of International Reply Coupons (IRC) or unused mint stamps to the value of postage. This will not be necessary with the larger broadcasters, however you will elicit if it is required, from the QSL columns in the shortwave club news sheets.

They would also like to know some information about you, your interests and activities. Above all, indicate some interest in their broadcasts even if you violently disagree.

Listening around the various frequencies from time to time, you have possibly come across the Volmet Networks. These are Utility Stations that transmit weather bulletins from various regional air terminals throughout the world, for the benefit of transoceanic flights, and other terminals. The information usually consists of wind direction and velocity, barometric pressure (QNH or altimeter), visibility, temperature (both wet and dry), cloud cover expressed as OCTA (five OCTA means 5/8th cloud cover, eight means completely overcast) as well as upcoming terminal forecasts. Most are aired in English on Upper Sideband.

Inforamtion is updated every half-hour. Sydney Volmet, VLS, on 10017 can be heard on the hour and half-hour. It also uses 3432 and 6680 kHz at the same time. Other Volmet stations are located at Anchorage (Alaska), Vancouver, Oakland (nr. San Francisco), Honolulu, New York, Shannon (Eire), Singapore and Tokyo. They usually can be found in the aeronautical allocation sharing a common frequency for their transmissions. In the table I have included the regional allocations. Interestingly, Australia is part of the S.E. Asia network and not the Pacific.

VOLMET NETWORKS TABLE

Europe 2980, 5575, 11391 kHz
Atlantic 3001 5652, 8668, 13272 kHz
Pacific 2980, 5519, 8903, 13344 kHz.
S.E. Asia 3432, 6680 and 10017 kHz.
North Africa 6575, 8896, 11279 kHz
South Africa 3495, 6617, 10073 kHz
Middle East 3001, 5561, 8819, 8823.5 kHz.

For example, New York Radio WSY 70 can be heard on 13272 kHm almost continuously from 0600 to 1200 GMT and 2000 to 2100 GMT. It can also be heard on 8668 occasionally but mixes with Shannon Volmet, which also transmits continuously as well. The channels are usually shared in five minute slots by the various regional centres during the half-hour. Listen on 13344 kHz and you will hear Oakland, Honolulu, Tokyo, Hong Kong, Auckland and Anchorage follow each other.

The Russians also have a Volmet Network running occasionally either in Russian or English on 13278 or 9033 kHz, but they are irregular in both frequency and time.

Well, that is all for this month. Until next time, the best of DXing and 73. ■

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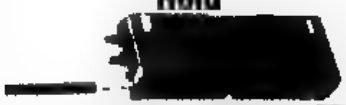

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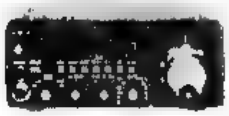

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NOVICE NOTES

Edited by Ron Cook VK3AFW

Where has all the AM gone? I hear some of you ask. Well, AM is alive and reasonably well, if not actually very robust. Try tuning 160m during the morning "coffee" sessions or the low end of the novice allocation on 10m. Some brave souls even venture on to 80m in the wee hours with Geloso VFO and trusty 807. AM has had a minor resurgence in the USA — nostalgia perhaps.

With the decline of the sunspot cycles about to start and the drop-off of the CB market I suggest that the novice may be able to acquire a low cost CB AM rig which could be put on to one or two net frequencies on 10m. During the past sunspot lows the 10m band was much neglected on frequencies more than 100 kHz away from 28.600 MHz. We cannot afford to let this happen in the future. Perhaps we should consider repeaters for the top end of 10m as per USA.

Well, some of you are probably a bit shaky on your AM theory so I have included a contribution from Elmo Jansz VK7CJ, which covers the basic theory well.

Over to you, Elmo.

THE BASICS OF AMPLITUDE MODULATION

Introduction

Radio stations broadcasting to the public do not do so in the frequency range referred to as audio frequencies. The audio frequency range lies in the frequency band 20 Hz to 20 kHz, which is the range of human hearing, but of course these figures vary with the individual.

Audio frequency information is used at the receiving end. Hence we may ask the question "Why don't we transmit on the range 20 Hz to 20 kHz? If all the broadcasting stations in a given locality transmitted simultaneously at audio frequencies, the airways would be blanketed by frequencies within the range 20 Hz to 20 kHz, and would interfere with each other's transmissions.

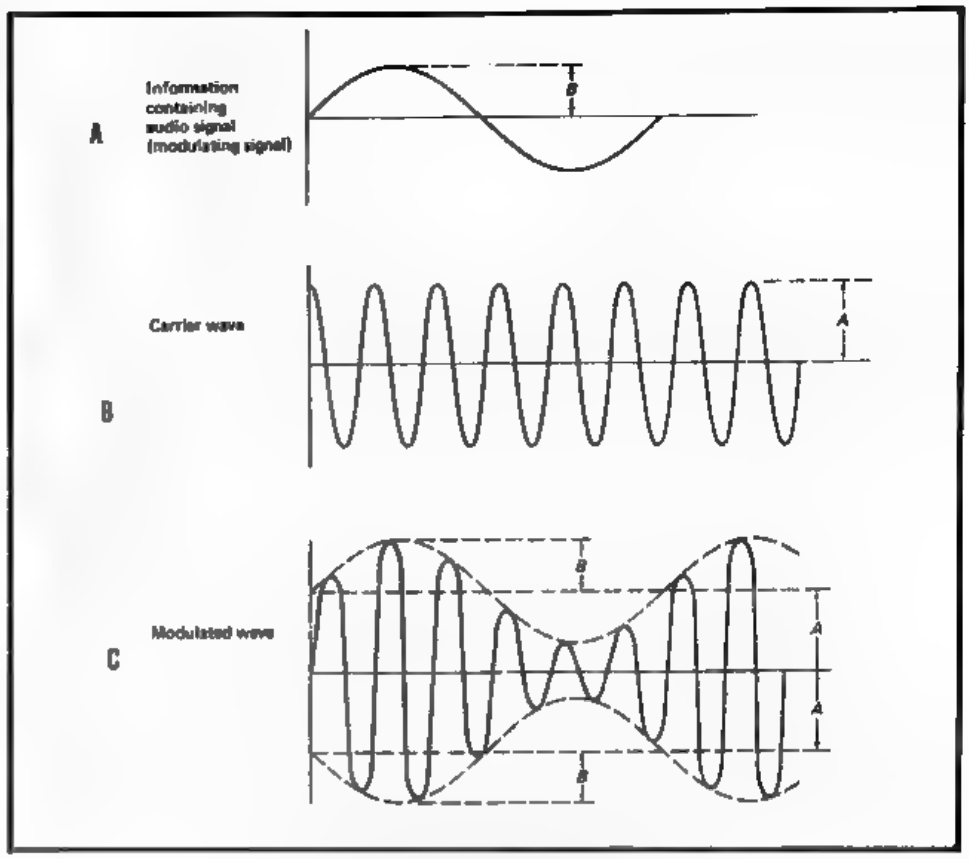


FIG. 1: AM waveforms; (a) and (b) show the basic components which are combined to give an AM signal as in (c).
A is called the amplitude of the carrier.
B is called the amplitude of the audio.

Also, from the basic idea of antenna design, the optimum size of an antenna is one-half or one-quarter of a wavelength.

Calculating the value of a half wavelength at audio frequency gives:—

7,500,000 metres at 20 Hz and 7,500 metres at 20 kHz.

These figures are obviously physically impracticable.

How then is the problem overcome? The answer lies in imposing the audio information to be transmitted on to a higher frequency signal called a "carrier". When this compound signal is received, the two signals are separated in the receiver and the original audio information recovered. Each station broadcasts using a different frequency, from which we could select the transmission of interest and eliminate all others by means of tuned circuits in a receiver.

The process of imposing audio information on another signal of much higher frequency is called "Modulation". The compound wave form, that is, after the modulation process has taken place, is called the "Modulated Signal". There are, very broadly, two basic types of modulation — Amplitude Modulation and Frequency Modulation. In this article we shall have a closer look at Amplitude Modulation.

AMPLITUDE MODULATION

In amplitude modulation, the amplitude of the carrier is varied in accordance with the amplitude of the audio signal. The three wave forms involved in amplitude modulation are shown in Fig. 1. Fig 1(a) shows the audio signal or modulating signal, (b) the carrier, and (c) the modulated wave.

For those who are mathematically inclined the unmodulated carrier can be expressed by an equation of the form —

$$y = A \sin 2\pi fct$$

where fc is the frequency of the carrier in Hz.

Similarly, the modulating signal can be represented by —

$$y = B \sin 2\pi fmt$$

where fm is the frequency of the modulating signal in Hz.

MODULATION INDEX

An important term, which is used in dealing with amplitude modulated signals is the Modulation Index which is defined as follows —

$$m = \frac{\text{Peak value of Modulating Signal}}{\text{Peak value of Carrier Signal}}$$

In this case $m = B/A$.

Again, using a little more mathematics, the composite modulated wave form can be represented by an equation of the form

$$v = Vc \sin 2\pi fct + \tfrac{1}{2} mVc \cos 2\pi (fc - fm) - \tfrac{1}{2} mVc \cos 2\pi (fc + fm)$$

Where Vc is the peak value of the unmodulated carrier, represented up to this point by A. Vc is the accepted jargon in communications.

FREQUENCY SPECTRUM

Let us now look at this equation more closely and try to interpret its various components in more down to earth physical terms. The modulated wave form is seen to have three frequency components, viz., fc, (fc — fm), (fc + fm).

If this modulated wave form is examined on a Spectrum Analyzer — an instrument used to analyze the various frequency components present in a compound wave form, a frequency vs voltage spectrum as shown in Fig 2 will result.

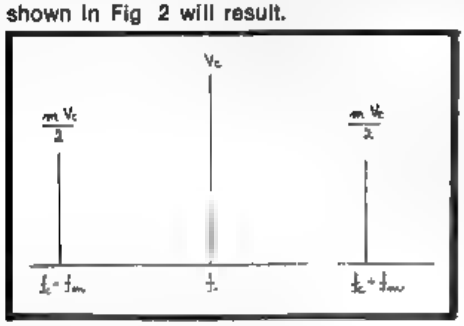


Fig. 2: AM Spectrum.

The frequency (fc + fm) is given a special name called the upper side band, while the frequency (fc — fm) is called the lower side band. These are the frequency components that are used in single side band transmissions. The amplitudes of the side bands are each equal to ½ mVc. Observe that this quantity depends on the modulating factor m.

POWER CONTENT

The total power content of the amplitude modulated signal can be represented by an expression as follows:—

$Pt = \frac{1}{4} m^2Pc + \frac{1}{4} m^2Pc + Pc$ Watts

where Pt = Total Power
Pc = Carrier Power
m = Modulation Factor

Each of the terms $\frac{1}{4} m^2Pc$ represent the the power of each side band.

The above expression is normally simplified into the form:—

$Pt = Pc (1 + \frac{1}{2} m^2)$ Watts.

This is a very useful expression in communications work, for it gives the total power of a modulated signal in terms of the carrier power Pc and modulation factor m.

EXAMPLE

Let us now work through a little problem to illustrate the above ideas. We are given the carrier power as being equal to 60 watts and the modulation factor is 100 per cent. We wish to find the total power of the modulated signal and the power in each side band.

We use $Pt = Pc (1 + \frac{1}{2} m^2)$
Pc = 60W, m = 100% .
Therefore Pt = 60 (1 + ½)
m = 100% really is m = 1.
Hence Pt = 90 watts.

We know that the power in the upper and lower side bands are equal — each being equal to $\frac{1}{4}$ Pcm^2.

In this case, power in L.S.B. = Power in U.S.B. = $\frac{1}{4} \times 60 \times 1 = 15$ watts.

CONCLUSIONS

The above figures bear out some startling facts. Two-thirds of the total power is in the carrier, while only one-third of the total power is contained within the side bands. Such a system, in which two-thirds of the total power is contained in the carrier alone and the rest in the two side bands is not very efficient. Methods have been developed to make better use of the available power. Some of these are Double Side Band Limited Carrier, Single Side Band Suppressed Carrier, etc.

Thank you, Elmo. AM died out on the DX bands because it uses twice the bandwidth of SSB, and because an SSB transmitter has up to a 9 dB greater signal in a distant receiver if the PEP inputs are equal. Nevertheless, unless the best frequency used in the receiver is correct to about 0.01 Hz, then AM quality of reproduction is far superior and hence easier to listen to during long rag chews. AM thus has a place for short haul type QSOs in those bands where there is space for several AM channels (e.g. 10m) or for those bands which have periods when DX working is not practical (e.g. 160m and 80m during daylight hours).

73 de VK3AFW. ■

"I MADE IT"

"I made it, I made it, wow, I made it!" The sheer joy of seeing those magic words "You were successful". The feeling cannot be described, only felt.

It has taken me twelve months of concentrated study, dotted with bouts of ill-health.

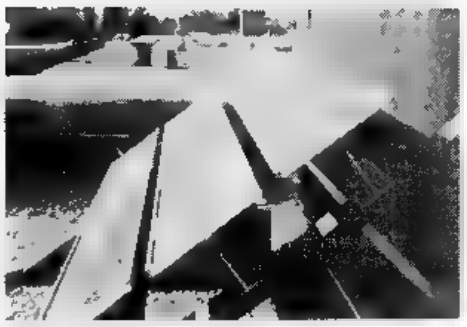
There are many people I have to thank for contributing to my success. Firstly my OM, Nev. VK2ZBQ, whom I bombarded with questions, morning, noon and night, seven days of the week, every week of the month, every month of the year. At 10 p.m. if I thought of something THAT COULD NOT WAIT UNTIL MORNING, Nev. would lend me an ear. He was a tower of strength to me.

Then there were the members of the Liverpool and District Amateur Radio Club, such as Athol VK2BAD, whose AOCP class I attended until I fell ill, then Athol sent me his notes to continue studying, and Paul VK2VXA, who drove me to classes, and Russll VK2NVR, who had been studying with me since the 4th December, 1980, and, last but by no meanes least, Susan VK2BSB, who had such faith in me and drove me to Macquarie University so I could take the exam. To all these people, and all the others who gave me moral support, which is very important, I owe my unbounded gratitude.

I'm applying for the "K" calls until I can master the Code, then it's "ALL SYSTEMS GO, LOOK OUT WORLD HERE I COME". Well maybe . . . maybe.

Daphne VK2NXD. ■

Congratulations, Daphne and good luck — VK3AFW



SOLAR POWERED QSO

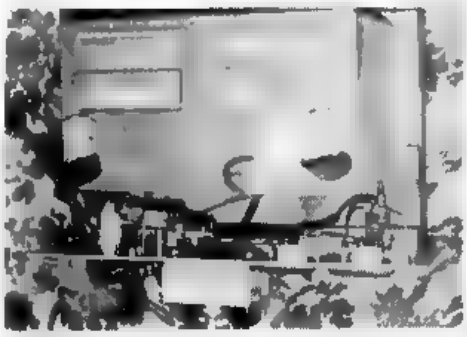
Greg Taylor VK3VGT wrote in recently about a station that he had worked. This was John WSPIZ.

John runs an Argonaut 509, a 2 watt QRP rig.

Outside he has 3 solar panels, see photo each giving 20V at 0.5A. During daylight hours the Argonaut is powered directly from the panels via a 13.5V regulator.

When the weather is not sunny and also at night two 12V batteries are used to power the rig. Of course these are charged by the solar panels during the day. Even during dull weather the panels supply a useful charge. The solar panels were purchased second-hand for only $40 each, so now John has no worries about the energy crisis.

The other photo shows a battery, the regulator, metering and switching equipment.—VK3AFW. ■



QSP

JOTA

Here is an extract from the Scout Association of Australia report on the 23rd Jamboree-on-the-Air in October 1980:—

"How can we continue to adequately express our thanks to the Amateur Radio Operators who again this year responded magnificently to our appeal to make available their services and their equipment, so that nearly 20,000 Scouts and Guides and our well-wishers could enjoy the 23rd Jamboree-on-the-Air. So often have we said 'bravo" or "thank you" that they could be forgiven for thinking we might be becoming blase, but I should like to assure them, on behalf of us all, that this is far from being so and that we will always be sincere in our appreciation. This year also a number of Branch Organisers have paid tribute to the Novice Operators among our Amateur Radio friends, who are increasing in numbers greatly each year, and who are becoming more and more noticeable for their contribution, especially in those remote areas, where Limited or Full Call operators may not always be found. So we gratefully include them in our thanks."

A total of 389 VK amateur stations participated in JOTA 1980, recording 7388 contacts including nearly 2000 overseas contacts. Perhaps 1981 can be made even better. ■

AFTERTHOUGHTS

THE TRINITY LOOP ANTENNA

In this article (Amateur Radio, V. 49, No. 5, May 1981, pp. 22-23) the author suggests that long DC control lines should be broken into non-resonant lengths with RF chokes. This is sound advice. The technical editor's comment which follows should be replaced by the following.—

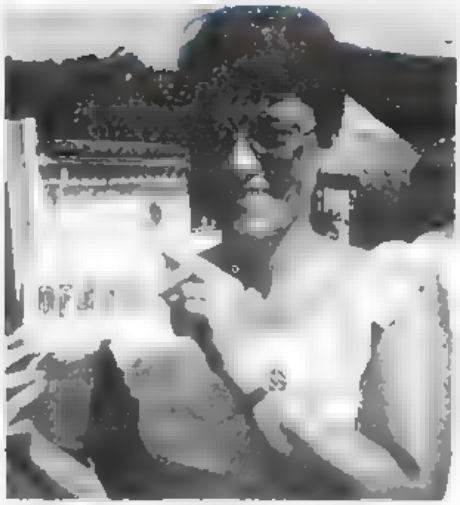
"The RF chokes may be formed by passing the control lines through RF torroids spaced so as to ensure that no resonances occur near the operating frequencies. The control wires should be looped through the torroids to form at least 6 turns. A dip oscillator could be used to check the lines for resonance. If a resonance does occur then the radiation pattern and gain of the antenna will be changed. Screened leads will be found helpful in reducing feedback of RF into the shack."

Fig. 2 includes a mysterious statement "20 =". This should be replaced by the approximate equation:—

$$Zo = 280 \times \log(S/a) \text{ ohms}$$

where a is the radius of the feedwire in the same units as S the spacing. Zo is the impedance of the feedlines system. ■

CLOSE-UP



DF4NM was a recent visitor to Melbourne. Helga hopes to return to Australia with her husband, Ekkehard DL3NAB as permanent residents in the near future.

VK amateur radio will certainly benefit with the arrival of this happy couple, whose interests cover HF and VHF. Helga is an ardent CW operator and DX hunter.— VK3VF. ■

Magazine Review

73 MAGAZINE May 1981
Special Antenna Issue.

June 1981
DF Doppler System Breakthrough (TC).

QST March 1981
PIN Diode Switching. Colour TVI (TP)

RADIO COMMUNICATION April 1981
Hellschreiber (G). Phase Shift Monitor (C). ■

QSP

CB IN UK

April 1981 Radio Communication reproduces the text of a press release issued by the UK licensing authority on 26th February. The UK personal two-way service (CB) will be authorised on the 27 MHz band on FM and a further frequency around 930 MHz. 27 MHz FM is expected to give far less interference to other users and is in line with France. Netherlands and Germany where 27 MHz FM has been legalized, and Eire, which is expected to do the same. The press release stated that existing illegal 27 MHz AM equipment will not be legalized — the volume of interference from CB sets using 27 MHz AM equipment is increasing nearly 5000 complaints in the previous 5 months being an increase of about one-third of all recorded complaints. New FM equipment will have to conform to minimum specifications and will require to be permanently marked. An annual licence fee is envisaged and it was hoped the new service would be brought into operation by the autumn in the UK. The RSGB welcomes the concept of licensing CB but retains reservations about the use of 27 MHz. ■

MALICIOUS INTERFERENCE

A malignancy by a minority, malicious interference continues to plague the amateur bands and has become a crisis in recent times. The ARRL poses and answers a number of questions in QST April 1981. A major and most effective way of combating it is to ignore it on the air but follow up with a report to the licensing authorities. Do not engage interfering stations in their own game. Amateurs and clubs should spread the word about proper operating standards and exert peer pressure. ■

EARTHQUAKE PREDICTIONS

Recent information suggests that the reception of beacon-type radio signals have some correlation with shifts in the earth's continental plates. There is some belief that hours before an earthquake occurs certain characteristics of transmitted radio signals improve. Amateurs are needed to gather information on changes in band conditions, particularly unusual or unpredicted HF band openings, and to report their observations for research purposes. Details from KB6CC, 4024 W. Monte Vista Avenue, Visalia, CA93277. QST April 1981 ■

PACKET REPEATERS

The primary function of a packet repeater is the same as that of the conventional repeater — to extend the geographic coverage of fixed or mobile stations but packet repeaters have the potential to far outstrip conventional repeaters with respect to flexibility and creative use. Also called a digital repeater, or "digipeater" in Canada, the packet repeater receives a message or block of data for re-transmission on the same frequency channel. A San Francisco amateur machine transmits data at 1200 baud. The framing format is high-level data link control and this is hoped to be one of the first steps in nationwide, or even international, networks of interconnected computer system. In April 1981 QST KA6M says this is a new frontier of amateur radio. ■

The Sunshine State "Jack Files Memorial Contest"

W. G. Sebbens VK4XZ, VK4 Contest Manager

All Radio Amateurs throughout the world are invited to participate in this contest, the aims of which are to perpetuate the memory of the late Jack Files and to enable amateurs to work stations for the Worked all Queensland Award and other awards issued by Amateur Radio Clubs in Queensland.

DATE AND TIMES

Sat., July 18th, 0830-1230Z (1830-2230k).
Saturday/Sunday, July 18/19th, 2330-0130Z (0930-1130K)

DIVISIONS AND SECTIONS

(1) Stations within VK4.
  (a) TX ALL BANDS.
  (b) TX HF ONLY.
  (c) TX VHF UHF ONLY.
  (d) TX ALL BANDS CLUB STATIONS.
(2) Stations Outside VK4.
  (a) TX ALL BANDS.
(3) SWLs.
  (a) RX ALL BANDS.

RULES

1. Contacts via repeaters or cross band or cross mode are NOT permitted for scoring purposes.
2. Stations may be worked repeatedly on all bands and modes provided that one hour has elapsed since the previous contact on that band and mode.
3. Scoring. In accordance with the above aims bonus points as follows apply: For the first contact to each Queensland City or Shire on each band during both, not each, sessions — 10 points. For every contact with a VK4 Club Station— 10 points. These are additional to the points below
   (a) Stations within VK4 —
   HF contacts to Opposite Zone, 5 points; Same Zone, 3 points; Outside VK4, 1 point. (VK4 is divided into two zones, the dividing line being the Tropic of Capricorn)
   VHF/UHF contacts to Other City or Shire, 5 points; Same City or Shire, 3 points, Outside VK4, 1 point.
   (b) Stations outside VK4 —
   HF, VHF, UHF contacts to VK4 Stations, 1 point; no points for other call areas.
   (c) SWLs —
   HF, VHF, UHF Stations logged as per rule 2, 1 point.
4. On the various HF bands it is recommended that operation be below 1820, 3600, 7075, 14175, 21175, 28450 kHz.
5. All logs shall show date, GMT, band, mode, call, n-sent, n-received and points. There must be a front sheet with the usual station, division and score details and declaration. Logs must reach the WIA Q Contest Manager, PO Box 964, Townsville, Q 4810, before 2nd August, 1981.
6. Awards will be given to the highest score in each section However, should a contestant receive an award in one section he will not be eligible for an award in any other section
7. The Contest Manager's decision will be final and no disputes will be entered into. ■

NEWS RELEASE

The following news release of 19th May, 1981, issued by the WIA Victorian Division, is published for general information.

The MMBW has passed an amendment to the Melbourne Metropolitan Planning Scheme which could cost ratepayers hundreds of thousands of dollars in unnecessary administration expense

Anyone intending to put up an aerial for reception or transmission of radio signals in a residential area may have to apply for a planning permit. This could result in local councils being deluged with applications for planning permits from persons in poor TV reception areas, those who want an antenna for reception of interstate or regional broadcast stations or short-wave international radio broadcasts.

Especially affected are those who engage in communications systems for safety and rescue, including volunteer coast guard services or civil emergency radio networks, users of certain types of CB antenna and most amateur radio antenna installations.

The amendment No 115, Part 3, follows a move by a number of municipal councils to upset recent decisions by the Town Planning Appeals Tribunal and in effect seeks total discretionary control for councils over the erection of radio masts and aerials in residential areas and the residents' right to receive or transmit radio signals.

The amendment, as proposed by the MMBW, will require a planning permit to be obtained for an antenna which has any horizontal dimension in excess of 3 metres. The proposals also place severe restrictions on the height of masts in addition to engineering requirements covered by a permit issued under the uniform building regulations.

The Town Planning Appeals Tribunal has held in a number of cases that a resident has a right to do those things which accompany normal domestic living, including the performance of a hobby. The Tribunal has taken the view that, under current planning regulations, a planning permit is not required for the erection of radio masts and antennas connected with domestic or hobby purposes. They are, however, covered under uniform building regulations insofar as engineering standards are concerned Local councils have sought to use the building regulations to prevent erection of antennas on other than engineering grounds.

Speaking on behalf of the Wireless Institute of Australia, which represents amateur radio operators at national and international government level, Mr. Alan Noble said that he was mystified that the MMBW had not sought competent advice. He said the WIA supports orderly planning in the community, but the Institute expects that planning and regulation should take reasonable account of the natural laws of physics. The current proposals do not do this. He said the WIA sent a submission of advice to the Minister for Planning as soon as it became aware of the current proposal. Mr Noble said the amendment, if approved in its present form, could affect nearly all types of antenna installations used for amateur radio, including satellite communications and UHF transmissions

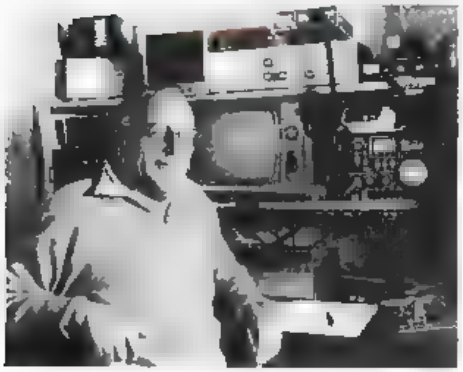
Amateurs are qualified by technical and by regulation examinations conducted by the Department of Communications. The Amateur Radio Service plays an important role in international friendship and ethnic relations. This is important to Australia in its physical isolation from the rest of the world. Amateur radio permits members of our ethnic communities to speak with their homelands by radio. People wishing to have an aerial designed to receive TV Channel 0 ethnic or an aerial designed to receive short-wave broadcast programmes in their own language from their countries of origin would also be required to obtain a planning permit.

Any unreasonable restriction placed on the size of amateur antenna installations would affect the efficiency and usefulness of the station It would reduce the effectiveness of the Institute's civil emergency network operators to the community in time of need. Melbourne amateur operators played an important part in the Darwin disaster by providing a vital link between Darwin and the rest of Australia for some time.

"It appears that some local councils are not aware of these aspects or they are not concerned with them in their efforts to achieve total discretionary control in the planning of parochial community 'amenities'," Mr Noble said. It was unbelievable that at a time when the State and Federal Governments are seeking actively to reduce costs, people at local government level appear to be acting in the opposite direction. ■

CONTESTS

Wally Watkins VK2DEW
Box 1055, Orange 2800



CONTEST CALENDAR

July

1	Canada Contest	
4/5	Venezuelan SSB Contest	
11/12	IARU Radiosport Contest	AR 7/81
18/19	Colombian Contest	CQ 7/81
18/19	Seanet CW Contest	CQ 7/81
25/26	Venezuelan CW Contest	CQ 7/81
25/27	County Hunters CW Contest	CQ 7/81

August

8/9	European CW Contest	
15/16	Remembrance Day Contest	AR 7/81
15/16	Seanet Phone Contest	CQ 7/81
22/23	All Asian CW Contest	

October

3/4	VK/ZL Phone Contest	AR 5/81
10/11	VK/ZL CW Contest	AR 5/81

EXCHANGES

Seanet. RS(T) plus 3 figure QSO number starting with 001.

Venezuelan. RS(T) plus 3 figure QSO number starting with 001.

All Asian: OM — RST plus age, YL — RST plus 00

RULES

IARU Radiosport, 0000Z July 11-2400Z July12. This is all band with three categories, CW, phone or mixed. Each station may be worked once per band regardless of mode. Single operator stations are limited to 36 hours of operating time. Off times must be at least 30 minutes and indicated in your log. There is no time limit for multi-ops, but operation must remain on the same band for at least 10 minutes.

Exchange. RS(T) plus your ITU zone.

Points. One point for stations in your zone, 3 points if station is outside your zone but on the same continent, and 5 points if on a different continent. Multiplier is the sum of different ITU zones.

Final score. Total QSO points from all bands times the sum of the multiplier from each band.

All logs to IARU headquarters, Box AAA, Newington, CT 06111, USA, by August 30th, 1981.

From June 1st the Federal Contest Manager will be **Reg Dwyer VK1BR**, and Reg will hold the position for a period of three years. All correspondence should be directed to **Box 236, Jamison 2614.**

Read carefully the rules for the **Remembrance Day Contest** this year. There are several changes but the most important is the change in scoring. From your point of view the scoring will now be easy — one point per contact. The formula will be applied by the Contest Manager and will be updated each year and is based on a Division's average participation over the previous 5 years. This formula has been proposed by Neil Penfold from VK6 and has been agreed to as it is the best formula yet brought forward that will allow any Division to win the trophy based on participation.

As this is my last column for Amateur Radio I wish to thank all those who have participated in contests over the last three years, and also to thank those who took time to write to me with sound suggestions, some of which have been adopted.

Best wishes to you all in your future contests.—Wally Watkins VK2DEW.

Remembrance Day Contest 1981 — Rules

AUGUST 15-16

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those who made the supreme sacrifice and so perpetuate their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, the winning Division will receive a suitably inscribed certificate.

OBJECTS

Amateurs in each VK call area will endeavour to contact other amateurs —

1. In other VK call areas, P29, and ZL on all bands 1.8 through 30 MHz
2. In any VK call area (including their own), P29, and ZL on authorised bands above 52 MHz and as indicated in rule 5.

CONTEST DATE

0800Z 15th August, 1981, to 0759Z 16th August, 1981

All amateur stations are requested to observe 15 minutes silence before the commencement of the contest on Saturday afternoon. An appropriate broadcast will be relayed from all Divisional stations during this period.

RULES

1. There shall be 3 sections —
   (a) Transmitting Phone
   (b) Transmitting CW
   (c) Receiving
2. All Australian Amateurs (VK call sign) may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.
3. Amateurs may use the following modes —
   Section (a) — AM, FM, SSB, TV
   Section (b) — CW, RTTY
   However, separate logs may be submitted for sections (a) and (b).
4. Cross mode operation is permitted but both stations may only claim points as for a phone/phone contact. Cross band operation is not permitted excepting via a satellite repeater.
5. SCORING Contacts:
   (a) On all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on Phone, CW, SSTV and RTTY.
   (b) AM, FM and SSB contacts score one point.
   (c) All CW/CW, SSTV/SSTV and RTTY/RTTY contacts 2 points. Note rule 3 re cross mode contacts.
   (d) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in rule 3 at intervals of not less than one hour since the previous same band/mode contact. However the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.
   (e) Acceptable logs for all sections shall show at least 10 valid contacts.
6. Multi-operator stations are not permitted (except as in rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign. Should two or more licensed operators wish to operate any particular station, each will be considered as a contestant and must submit a log under his own call sign.
7. Club stations may be operated by more than one operator, but only one operator may operate at any one time (i.e. no multi-transmissions). All operators must sign the declaration.
8. Entrants must operate within the terms of their licences.
9. CYPHERS:
   The serial number will consist of three figures that will be incremented by one for each successive contact. A contestant may start with any number between 001 and 999 but when 999 is reached he will start again at 001.
10. ENTRIES must be set out as shown in the example using one side of the paper only. Envelopes must be marked "Remembrance Day Contest", postmarked no later than 15 September, 1981, and posted to FCM, Box 236 Jamison 2614.
11. TERRESTRIAL REPEATERS. Contacts via terrestrial repeaters are not permitted for scoring purposes. However, contacts may be arranged through the repeater and if successful on another frequency, that contact counts for scoring purposes.
12. PORTABLE OPERATION: Log scores of operators located outside their own call area will be credited to that call area in which operation takes place. e.g. VK5XY/2. His score is added to the VK2 scores.
13. All logs shall be set out as in the example shown and in addition MUST carry a front sheet showing the following information in this order:
    Section, Score, Call Sign, Modes, Name, Address.
    Declration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
    Signed Dated
14. The Federal Contest Manager has the right to disqualify any entrant who, during the contest, has not observed the regulations, or has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set out logs.
15. The ruling of the Federal Contest Manager of the WIA is final and no disputes will be entered into.

AWARDS (Sections (a) and (b))

Certificate will be awarded to the top scorer in each section for each call area and will include the top Limited and Novice station. There will be no outright individual winner. Further certificates may be issued by the FCM at his discretion.

VK0 scores are added to VK7 and VK8 to VK5. Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P29 stations are not included in the scores of any VK call area.

The trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION

1. This section is open to all Short Wave Listeners in Australia, Papua, New Guinea and New Zealand but no active transmitting station may enter.
2. Contest times and logging of stations on each band are as for transmitting.
3. All logs shall be set out as in the example. It is not permissible to log a station calling "CQ". The detail shown in the example must be recorded.
4. Note the times and conditions set out in rule 5 (transmitting).
5. Club stations may enter this section. All operators must sign the declaration.

AWARDS

Certificates will be awarded to the highest scorers in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager. ■

EXAMPLE OF TRANSMITTING LOG

Date/time GMT	Band	Mode	Callsign worked	NR sent	NR rec'd	Points

EXAMPLE OF RECEIVING LOG, VICTORIAN SWL

Date/time GMT	Band MHz	Mode	Callsign heard	NR sent	Station called	Points
16/8/81						
0612	7	P	VK5PS	002	VK6RU	1
0615	7	CW	ZL2AZ	004	VK4KI	2
0618	14	P	VK0ZZ	006	VK6FI	1
1620	28	P	VK3NAA	077	VK6N2Z	1

Dupe Sheet for the Remembrance Day Contest

John Moulder VK4YX
P.O. Box 323, Warwick, Qld 4370

Avoiding duplications on your log sheets during a contest can be a problem, even if you have only worked 50 contacts. The method I am about to describe is not original. I came across an article in a 1960 edition of AR, which described a method of using a dupe sheet for each VK call area, plus one for ZL and P29. As you can probably surmise, it was evolved for the annual RD contest.

Juggling a few sheets during a contest didn't appeal, so I adopted the basic idea and came up with the following.

I obtained a sheet of thin white cardboard approximately 60 centimetres square from the newsagent. I measured in 4 centimetres from each side and draw a border. Along the top and bottom and likewise down each side, make a mark each 2 centimeres. Draw a grid pattern by interconecting all the marks top and bottom and side to side. At the top and bottom of each column, starting from the left hand side, mark each letter of the alphabet. Do the same down each side, starting at the top.

The top left hand corner should look like FIG. 1.

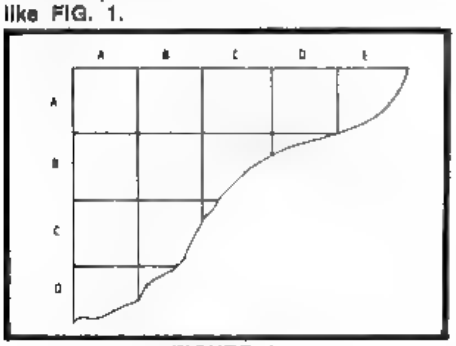


FIGURE 1

Along the top of the coardboard we label FIRST CALL LETTER. Down the sides we labe SECOND and THIRD CALL LETTERS. We are now ready to go.

As an example, say we worked VK8BD on 15 metres. Looking across the top of the sheet, we locate column B; down the side we locate column D; in the intersecting square we write, 8/15. See Figure 2. If you worked P29BD on 10 metres, you would enter P29/10 in the same square. We can take two further steps if needed. You may like to enter the mode after the callsign and the time of contact, if it can be squeezed in.

Very clever you may be thinking, but what about a callsign with a three letter suffix? As an example we'll say we worked VK7BCC on 80 metres CW, and ZL2BCA on 15 metres SSB. We locate our intersecting square of B C, and we enter 7C/80CW. Underneath this entry we write ZL2A/15SSB. See Figure 3. All the information can be fitted in a 2 centimetre square if you use a fine tipped pen. You could use larger squares, however the size of cardboard needed may make it too unwieldy. This system is used hand in hand with your normal log sheets. What I did was work a string of stations, enter them on the dupe sheet, and then continued on in a merry way.

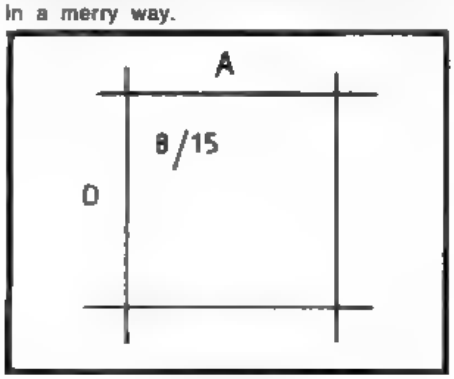


FIGURE 2

The only problem I can envisage, is the size of the sheet may make it unworkable for some operators. I got around the problem by taking over the kitchen table, which just happens to be beside our wood burning stove (very cosy). I had a great time during the 1980 RD. I made my best score, with no duplications. Unfortunately I completely forgot to send my log sheets in. Give this system a go. ■

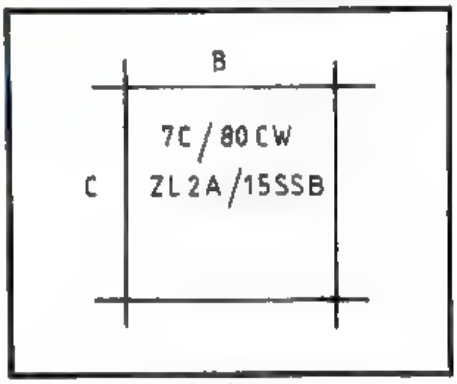
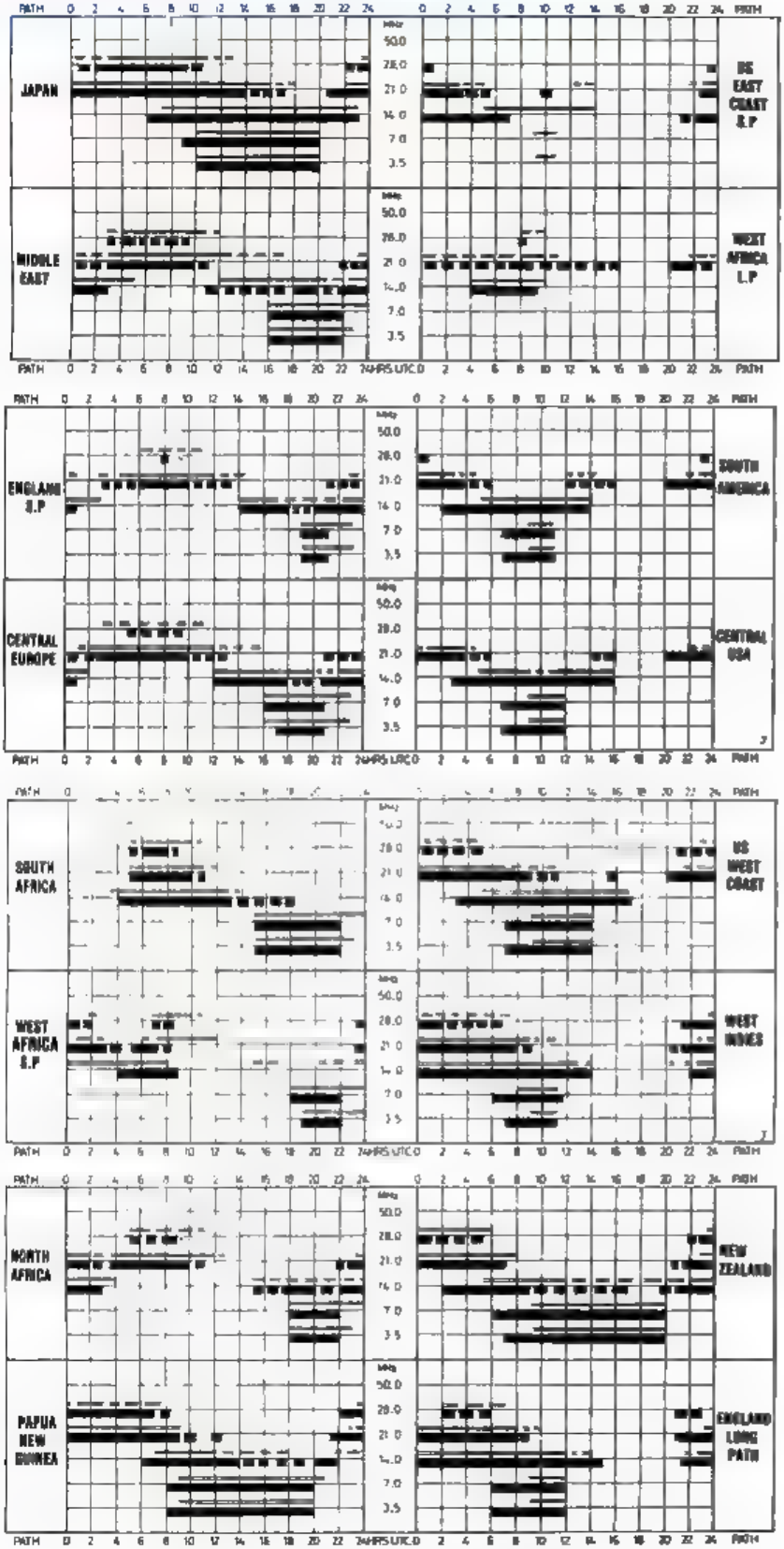


FIGURE 3

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT)

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
Federal EMC Co-ordinator

ELECTRO-MAGNETIC COMPATIBILITY

Australian amateurs may take some cold comfort in the fact that the professional engineers are confronted by many complex EMC problems, especially in Europe and North America, as outlined by IEEE and in ITEM.

In these days of modern single sideband amateur equipment and colour television, the incidence of TVI is, in most cases, the fault of the television receiver, not your amateur equipment. In by far the majority of cases, the reason for interference is found to be inadequacies of TV receiver design and construction.

Audio devices are designed to amplify audio signals such as music or speech and are not intentionally designed or intended to function as receivers of radio signals. The problem is not caused by the improper operation or by the technical deficiencies of the radio transmitter. The strong radio frequency energy is accepted by the audio circuitry due to inadequacies in design, "overloads" the amplifier, is "rectified" and amplified, and appears at the speaker as an undesired sound. The only "cure" is by treatment of the audio device.

With Australian RFI legislation in the "pipe-line" it is interesting to note that German amateurs are worried at some aspects of new EMC regulations, which are due to be introduced there in July this year, and which could present major problems to amateurs. Receiver immunity standards, imply that listeners and viewers can expect to be protected against strong signals. The limits vary from 3 v/m to only 0.5 v/m between 47 and 108 MHz and as low as 0.2 v/m on intermediate frequencies of the receiver. It has been shown that field strengths of 15 v/m can be encountered at distances of about 12m from amateur transmitting aerials of stations operating within legal limits.

The German EMC regulations are not concerned with electronic appliances other than radio and television receivers and do not cover audio amplifiers, tape recorders or electronic organs.

The National EMC Advisory Service is making every effort to monitor all aspects of RFI as applicable to amateur radio. The efficiency in this area can be vastly improved by the assistance of all Australian amateurs. ■

HELP WITH INTRUDER WATCHING

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

At the last meeting of ALARA a small memento of our appreciation for services rendered was presented to Daurel VK3ANL. Our good wishes go with them as they return to the USA.

A very slow response has been received from the last news letter Office-bearers and the new constitution are still pending.

Mavis VK3BIR, QTHR, is in charge of new memberships and also subscriptions, etc.

Jessie VK3VAN, c/- PO Box 38, Frankston, is our new Secretary. Thank you very much for offering assistance.

Mavis VK3KS, QTHR, is awards custodian for ALARA award. Please apply direct for speedy return of award.

Geraldine VK2NQI, PO Box 56, Kemps Creek 2171, is magazine editor and is very anxious to hear from you about your achievements. Remember, no news means no newsletter.

Bobbie VE7CBK sends her 33 to all girls via Mavis VK3BIR.

Liz DJ0KC sends her 33 also to all VK YLs and says when daughter Fie is bigger she hopes to become more active.

NEW CALLS noted since last month.—
VALDA: VK3DVT, was VK3VUO.
DIANE. VK6KYL, was VK6NGQ/ZYL.
MARGARET: VK6QM, was VK6NFO.
MARGARET: VK2KES, was VK2VPQ.
DAPHNE. VK2KDF, was VK2NXD.

Congratulations to all the girls on their up-grades and good luck to all who are still studying.

Congratulations to Jenny VK5ANW on your appointment to Council. Jenny was the only YL delegate at State Council Conference in Melbourne recently.

A novel competition won by Joyce VK2DIX was a shopping contest. In 90 seconds Joyce managed to "win" herself a good supply of groceries to help the budget.

Remember the ALARA net, Monday nights 2030 EAST, 3.565 ± MHz. A roster is working now, so please call in; VK2DYL is used by Geraldine and Daphne, Marilyn VK3DMS and Mavis VK3BIR or Helene VK7HD are the calls to listen for.

Until next month, good luck and good DX. 33/73 Margaret VK3DML, 28 Lawrence Street, Castlemaine 3450. ■

QSP

10 MHz BAND

The ARRL in relation to the impending new band at 10 MHz (on a secondary, non-interference basis) proposed that General, Advanced and Extra class amateur licensees should have equal access, an input limitation of 250W and modes be limited to A1 and F1 with some provision for telephony use in emergencies.—QST April 1981. ■

SILENT KEYS AND OBITUARIES

It is with deep regret that we record the passing of —

Mr. W. D. TAYLOR	VK2PJ
Mr. T. W. M. PETERSEN	VK4YO
Mr. W. D. TAYLOR	VK2PJ
Mr. E. A. H. CHEEL	VK3VKD
Mr. E. T. WALTER	VK5EE
Mr. T. H. PETERSON	VK4YO
Mr. R. RUSSELL	VK3VER
Mr. R. J. HAINING	VK2AMQ
Mr. B. B. ROCKING	VK3ADB

ERN CHEEL VK3VKD

The passing of Ern Cheel VK3VKD on the 12th April, 1981, aged 73 years, was sudden.

Although Ern had been a Novice operator for just over 18 months, the enjoyment he received from the hobby was immense. He was a member of the Gippsland Gate Radio Club, and a keen "Reg Cheeser" with an interest in fly fishing, golf and water colour painting. He had over 500 QSOs logged, mostly on 10m.

His cheerful approach to the hobby will be sadly missed. To his wife Nell, and his daughter and family, deepest sympathy is extended from all his Ham friends.

Barrie Astbury VK3KJB. ■

BRUCE HOCKING VK3ADB

I regret to inform you of the death of Bruce Hocking VK3ADB, of 45 Wallace Street, Morwell 3840.

Mrs. Hocking has supplied me with the following information:—

Bruce died on 16th May, 1981, at the Traralgon Hospital; gained his AOCP September 1971, call sign VK3ADB. He was widely known for his marketing and maintenance of the 2m Gippsland Transceiver kit.

He was an Elder of the Presbyterian Church, Morwell; President of 1st Morwell Scout Group; an OASIS member of Apex; President of Morwell Horse and Pony Club; Lifeline Councillor; Committee Member Commercial Road State School Morwell; Past President Morwell Presbyterian Tennis Club.

His funeral service filled the Morwell Presbyterian Church.

And I lost a very good friend.
He was a Unit Controller with the SEC.
Yours faithfully,

J. G. Colley VK3QZ. ■

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

10 Forest Grove, Epping, NSW 2121
18/5/81

The Editor,
Dear Sir,

One of the difficulties in enjoying amateur radio in 1981 is coping with the very congested conditions on our bands — the HF bands in particular.

It seems to me that the Institute policy could be making this situation worse by actively encouraging more people to take out amateur licences. It could be also that the Institute has gone the way of most organisations, perhaps unthinkingly and by default, of striving to become bigger, because "bigger is better". The WIA was formed because of amateur radio, not vice versa. It may be that a static (or smaller) amateur population could be served better by a static (or smaller) WIA.

A constant, or falling, number of licences should mean less work for all parts of DOC, and could mean a slower rate of increase in licence fees, particularly in this era of the user paying. It may also result in a net average increase in the technical and operating competence of the overall amateur fraternity.

While it is true that the amateur ranks provide a pool of trained technical people, it seems to me that its importance should now be looked at more nationally because (i) more amateurs are simply buying gray boxes and so require less technical ability than previously; (ii) with the world becoming digital, there are many people whose hobby and self-education interests are based on microprocessors rather than receivers and transmitters, and (iii) the field of electronics now means much, much more than radio, as it did 40 or 50 years ago, with many more people involved. This means that increasing the number of licensees may not be as important as it once was seen to be.

It may be argued that the large world-wide amateur population resulted in the new WARC bands. However, it could also be that the success was due more to better preparation, organisation and management than before — the sign of a maturing organisation.

Please don't misinterpret my thoughts in this letter. I am not suggesting that amateur licences be any harder to obtain. Rather, I am suggesting that the role of the institute should be to assist those who have, or who wish to obtain a licence, but to desist from actively campaigning for more new amateurs. Publicity where necessary, should be along the lines of "this is what we do", rather than "come and join us". After all, the radio spectrum is finite, and more users in the same space must mean more crowding.

I should add that I have, in the past, helped people obtain their licences by assisting a class.

Yours faithfully,

G. McCulloch VK2BMZ. ■

Point Lookout, North Head, NSW
May 20th, 1981

The Editor,
Dear Sir,

Ref Third Party Traffic Network. The timely reminder to give the lads a "free uninterrupted channel" is most welcome. For too long has the group been harassed by two well known Creins and some of their followers. Here on the North Coast they are well known for their purposeful jamming of Sam Voron's net.

In a letter written to another radio publication the operator from Castle Hill was termed a "KOOK" and has already drawn criticism to himself and the Amateur fraternity by his blatant interruptions of the net. He and other Tono/VDU operators, and other licensed operators who should know better, have consistently caused jamming and rude comments on the 80m and 40m net in which Sam

operates. The Castle Hill "KOOK" is well known for his on air comments in relation to Third Party Traffic, and I doubt whether he has ever handled a message in his life. His expulsion from the CB band was because of his degrading habits. Unfortunately his acquisition of an automatic means of sending Morse code has given him Dutch courage to send this and RTTY over all parts of the bands. As an intruder "KOOK" he is well named.

We and others here are highly critical of his unauthorised transmissions and of course if you take their typewriters and video readouts from them, they are dumb. It is doubtful if any can do over 20 w.p.m. Morse code without automatic means, and one from Pt. Macquarie is hopeless, using a key board without proper spacing. I hope the WIA will monitor these people and let Sam and his mates have a fair go.

Yours faithfully,

L. Adamson VK2PVH. ■

3 Corkill Street,
Freshwater 4872, Qld.
14/5/81.

The Editor,
Dear Sir,

Having read Sam Voron's amazing article, "National Third Party Amateur Radio Network", AR May 1981, my first reaction was "You must be joking surely!".

If you have published this article to expose the NTPN as a lot of nonsense, unworthy of amateur radio — "My congratulations, Sir!" — if, on the other hand, you have accepted it, then the WIA appears to have abandoned WICEN and to be on the path of self destruction.

For the benefit of all your readers the ridiculous misconceptions in this article must be corrected.

FIRSTLY

WICEN **DOES NOT** participate in uncontrolled traffic nets handling **unauthorised** emergency messages. It appears that the third party traffic "intentions" of the WIA have been misunderstood or deliberately misread by Sam Voron.

SECONDLY

In Queensland the State Emergency Service and WICEN will in **NO WAY ACCEPT** SB type "Emergency traffic" of the kind envisaged by him and the operation of his NTPN with WICEN is just

NOT ON!

Unreliable operation of this type is so often open to hoaxing and false information that it is not acceptable to the Emergency Services whose manpower and facilities could be placed at risk by irresponsible persons during a disaster situation.

Several years ago the Queensland SES moved to "short circuit" this type of network and responsible CB operators were recruited into the Communications groups to be correctly trained in emergency traffic handling with the SES.

THIRDLY

WICEN welcomes all new amateurs who wish to assist in emergency networks, they would be correctly trained in the standard operating procedure by experienced operators and instructors.

They would gain valuable experience in controlled net operating during regular WICEN/SES exercises so that, in an emergency, they are ready to render a worthwhile community service.

This WICEN training is provided by district Amateur Radio Clubs throughout the country.

FOURTHLY

He complains that his illegal network is being interfered with — well! there are rotten apples in every barrel — they are usually found together!

Responsible amateurs are just not interested in his "one man band" antics.

Sam Voron should act on his own advice and direct all "Dear Aunty Jane" traffic from the general public to the nearest phone box.

I know that the majority of amateurs will agree with me when I say that this type of traffic is **NOT** what Amateur Radio is for and it is **NOT WANTED** on our bands!

Genuine amateurs should be concerned with enhancing the reputation of our hobby not degrading it!

Ted Gabriel VK4GY, WICEN Co-ordinator, Region 1, Queensland. Ex VK6TG, formerly WICEN Co-ordinator, Western Australia. SES Communications Instructor, Cairns, Queensland. ■

RAOTC
RADIO AMATEURS OLD TIMERS CLUB

VK/ZL QSO PARTIES

It has been agreed between executives of the Old Timers' Clubs of Australia and New Zealand that members of the two Clubs should get together in a series of pilot "QSO Parties" or "mini contests" over the next few months.

As there are problems such as dates and times which are mutually acceptable to all areas, there being a four hour time difference between ZL and JK6, and skip distance on the higher frequencies, the experience gained in the conduct of these contests and the advice and preferences fed back in comments with the entries, will help us determine the format and frequency desired by a majority of the joint club memberships.

RULES

Eligibility

The contest is open to members of OTC (New Zealand) and RAOTC (Australia).

Contest Exchange

Members will exchange:—

1. Their Club membership numbers, VKs prefixed by "A", ZLs prefixed by "Z".
2. Year of first licence.
3. Name.
4. Age.

e.g. Nr. A 256 1951 Bill 49
Nr. Z 128 1923 Harry 78

Scoring

Each completed exchange will score 5 points.

Multiplier

The total of VK/ZL districts contacted will be added.

Final Score

Contact points x multiplier.

DATES AND TIMES

Contest 1 80 metres — centre frequencies: CW 3515 kHz, SSB 3650 kHz.
Monday, 20th July, 1981, 1000Z to 1400Z.

Contest 2 40 metres — centre frequencies: CW 7015 kHz, SSB 7075 kHz.
Monday, 17th August, 1981, 0800Z to 1200Z.

Contest 3 20 metres — centre frequencies: CW 14050 kHz, SSB 14150 kHz.
Monday, 14th Sept., 1981, 0200Z to 0600Z.

ENTRIES

Claimed scores, i.e. contact points x multiplier = final score, and mode used will be forwarded to the Secretaries of the respective Old Timers' Clubs, who will then exchange lists for publication of results.

Keep these dates before you and please make an effort to participate.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateurs Old Timers' Club.

A self addressed stamped envelope (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Victoria 3225, will bring you a membership application form.

Old Timers' Net — First Monday of each month, 0000Z on 7120 kHz, 0200Z on 14150 kHz. ■

HAMADS

- Eight lines free to all WIA members. $8 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA 1979 Call Book.

FOR SALE

Scalar SC22DX 5 Band Vertical Trap Antenna, has had one hours use, only on portable use, complete with instructions, $100 (a bargain at this price. Mal VK2PDA. Ph. (066) 74 1898.

TS520S HF Txcvr., as new, all manuals and orig. packing, $539; PRC11 38-55 MHz FM Txcvr., with circuit diagram, $48. VK2VSI. Ph. (049) 97 0383, 9 a.m.-1 p.m., or write PO Box 16, Hawks Nest 2324.

Bigear 2m FM PLL, as new, 144-148 MHz in 5 kHz steps, +600 kHz, +1 MHz, —600 kHz, —1 MHz, offset for repeater working, hi/low power, complete with manual, $260, ONO. Barry Fittler VK2DLI. Ph. (049) 33 3658 or 95 Brunswick Street, East Maitland 2323.

FT75B Txcvr., AC power supply, some crystals, external VFO, $300. VK2AQX, QTHR. Ph. (067) 42 1067.

Marconi Video Monitor, type V6112, 14 in. screen, frequency response 10 kHz to 9 MHz at ± 3 dB, technical manual, $50; BC221-AL HET frequency meter, 125 kHz to 20 MHz, with calibration book, $45; 5FP7 CRT, suitable for slow scan monitor, $10. VK3ZY, QTHR. Ph. (03) 277 4748.

Yaesu FT101EE, AC/DC, complete with fan, mic., cables, instruction manual, late model, perfect cond., $580. Ph. (059) 74 1136.

Yaesu FT200 Txcvr., plus power supply and mic., $300. VK2ASI, QTHR. Ph. (067) 66 1033 or (067) 65 7947 AH.

Kenwood Station: TS180S Txcvr., fitted with WARC freq. bands, CW filter, 2nd stage SSB filter, SP180 ext. spkr. with switchable audi filters and AT180 tuner/SWR/power meter, all as new, orig. packing, $995 the lot. Barry Hartley VK2FE, QTHR. Ph. (042) 29 1455 (work), (042) 84 2439 (home).

Kenwood TS520S, $550. Ph. (03) 791 2947 after 4.45 p.m.

RTTY System: Consists of a Xitex SCT100 video terminal, a model 15 printer, ST16 demodulator-regenerator, 2650 computer, software for RTTY is memory to store the broadcast off air, any stored text can be transformed to tape at 2000 baud and reloaded, built- in EPROM programmer, sotware includes Basic, assembler, source generator and text processor, also available model ASR33 ASCII printer, sell complete system or separate. VK2BHF, QTHR. Ph. (02) 981 4782.

TS820S with DC-DC converter and CW crystal filter, $750. Bruce, QTHR. 98 7797.

Yaesu FT-2FB FM 2m Txcvr., all popular repeater and simplex channels installed, together with matching heavy duty FP-2 Yaesu AC power supply, nicad charger, both units in exc. cond., with owner's manual, $175. GPO Box 5078, Sydney 2001, NSW. Ph. (02) 799 7855.

Communications Receiver, Marconi type CR150/3, 2-60 MHz, $85; Geloso amateur band receiver, type G209, $80. VK2LK, QTHR. Ph. 635 6874.

Calculator: Hewlett Packard HP25 programmable scientific calculator with 49 programme steps and memories and 87 pre-programmed functions, supplied with nicads, charger, user's manual, programmes book and case, $70. Ray VK1ZJR/4, QTHR.

TS520S, as new, in orig. carton, $580. Ph. (076) 32 3048.

Icom IC202 SSB Txcvr., in perfect cond., plus 20W AWA linear amp to suit, $200. VK4ZNC, QTHR. Ph. 225 7207 work, 285 2121 home.

Icom IC22S 2m Trx, incl. 5/8 mob. whip, $195; Heath SB200 linear amp., 80 through 10m, 1200W input, $350; Heath H8 microcomputer, 16k ram parellel/serial I/O, basic, assembler, text editor, $495; Heath H9 video display/keyboard, RS232 interface, $300; mod. 15 teleprinter, $50; all gear good cond., working, must sell, QSYing HZ1, make offers. VK3BSX. Ph. (03) 598 1034.

National DR48 Rx, digital readout, variable filter, covers 525 kHz to 31 MHz, plus 88 to 108 MHz FM, 6 mths. old, mint cond., with carton, worth over $500, will sell for $390 or best offer. K. Blume VK2BJK, QTHR. Ph. (02) 449 1598.

Eddystone 750, 0.5 to 32 MHz, continuous coverage Rx, $100; BC348, 1.5 to 18 MHz, $50, or nearest offer. VK5MC, QTHR. Ph. (087) 35 9014.

TRS80 Microprocessor, 16K, level 2, inc. VDU and tape deck, also 16K interface, disc drive 1 and 2, tractor feed printer; software: inventory control and general ledger, plus spare discs, little use, selling well below cost, ideal station log. VK2BOT. Ph. (065) 53 9505.

Teleprinter Ribbons, new nylon on Kleinshmidt spools, rewind on to your own spools, standards width, black, $3.50 per dozen posted; Philips VCR cassettes, good, used cond., suit N1500 or N1700 machines, VC45s, $8 posted, VC30s, $6 posted. VK4KDP, PO Box 300, Darra, Qld. 4076. Ph. (07) 375 4444.

Shack Clearance: Yaesu FT7B and FP12 power supply, $600, has extra 10m and 11m xtals; JIL SX100 VHF/UHF scanning Rx, $300; Cobra 148GTL converted CB, 20W PEP, full 1 MHz coverage, $200; CE-42 duo-band yagi, with balun, $130; Scalar 5 band trap dipole, $60; Dick Smith 40 MHz freq. counter, $80; all serious offers considered. VK3NWL, QTHR. Ph. 723 3717 RH.

Collins S Line, 75S-3B, 32S-3, 516F-2PS and Collins mic., spare tubes, manuals and solid state speech processor, $1300. VK2ALF, QTHR. Ph. (02) 230 5235 Bus. (02) 476 4903 Home.

One Robot 400, fast to slow TV converter, $700. VK3YRB. Ph. 429 1461.

Two X Philips FM321 Txcvrs., 70 cm, as new, $215, ONO; Kyokuto FM-2025A 2m Txcvr., as new, $310, ONO. Peter VK2YPU, QTHR. Ph. 601 1134.

Collins S-Line 75S-3 Rx, noise blanker, full set Skytec tubsters, $600; 32S-1 Tx with 516F2 power supply, speaker, spare valves, $600. VK4AJ, 3 Owen Street, Toowoomba. Ph. (076) 38 1113.

ADVERTISERS' INDEX

Communications Rx DX300 (Realistic), 0.15 to 30 MHz, digital display, manual and orig. packing, as new, ideal for SWL, $325. Ken VK1NDK, QTHR. Ph. (062) 49 7649 AH, (062) 65 4551 BH.

Deceased Estate VK1JK: Yaesu FTDX 401D Tx, matching FV401 VFO (unused), matching Yaesu speaker, complete station with all manuals, all unmodified, performance and appearance as new, sell only as one package, $425. Mrs. Knight, Canberra. Ph. (062) 54 2630.

Equipment owned by former VK4ADD: FT101B Txcvr, Yaesu, $500; Yaesu dummy load wattmeter, $85; Oskerblok SWR-201 SWR and power meter, $50; 3-way coax switch (manual), $5; morse keys at $5 each. Mint cond., all boxes and manuals included Mrs. Sutherland, 34 Ashbourne Tce., Labrador 4215, at the Gold Coast. Ph. (075) 37 1109.

WANTED

Radar Systems, GEE and Monica receivers, PSU and control panels, H2S, SCR717, APS2, APS3, APS4, TPS3 radars, tailend Charlies, Rebecca, Eureka, and Walthar, hand books, indicators, aerials, chassis of complete systems required regardless of cond. W. BABB VK3AOB. Ph. (03) 337 4902.

Kenwood TS762S, with mic., good cond., model 15SR teletype, good cond. VK5NTW, PO Box 109, Chermside, Qld. 4032.

2m Meteor Scatter Skeds, suitable station, would need to be 800 to 2000 km from Brisbane. If interested please contact Allan VK4ZRF, QTHR. Ph. (07) 349 1488 home, (07) 225 4477 work.

Linear Amp, suitable for FT7. VK3WW, QTHR. Ph. (03) 465 2991.

Could someone help me with a circuit diagram and operating instructions for the Radio Equipment Pty. Ltd. Supertester university valve and capacitor tester, all correspondence answered. Contact or send to M. A. Martin, VK3VSM, 19A Mason Street, Regent, Vic. 3073.

Used HF SSB Txcvr, need not be working, must be cheap, for radio club. PO Box 505, Bondi Junction 2022, NSW. Ph. (02) 799 7655.

Prop Pitch Motor or cowl gill motor for steering a 30 ft. dish for moonbounce operation, non-working units acceptable. Chris Skeer VK5MC, Hatherleigh 5260. Ph. (087) 35 9014.

TRADE HAMADS

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CB and Ham Disposal Sale: FT901D 1.8 to 30 MHz AM, FM, SSB, FSK, CW Txcvrs., $895; MLA 2500 2000W 1.8 to 30 MHz linear amp., $895; DX 160 Rx, $139; FRG7 Rx, $295; Eddystone Rx, 2 models, VHF 19 to 165 MHz, UHF 148 to 500 MHz, 240V functional, $250; serviceable, $120; Collins $30,000 1700 channel 200 to 400 MHz brand new military Tx with circuit only $95; lots of CB radios and walkie talkie 18 channel SSB AM from $139; 23 channel AM $49; 18 channel AM, $69; 27 and 28 MHz helical antennas, $8.50; different rigs coming in each tested like new before despatch to you. When in Sydney drop into Park Disposals, 32 Park Street, Sydney 2000, near Town Hall Railway. Ph. (02) 264 7515. Rigs posted anywhere in Australia, NZ, PNG, Pacific.

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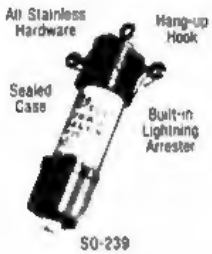

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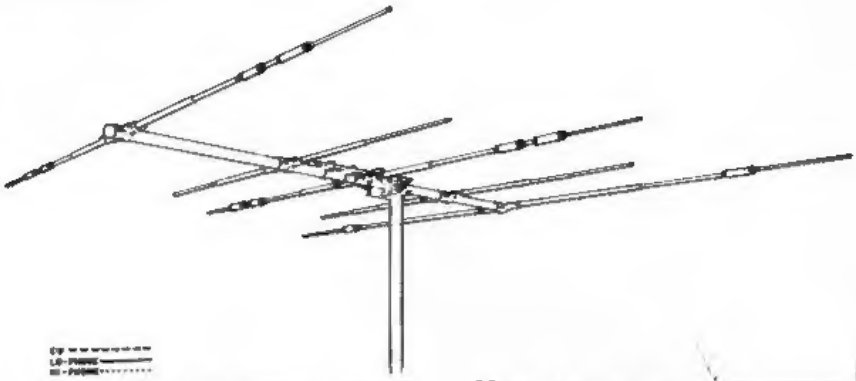
hy-gain

HF TRIBANDS

HY-GAIN TH5DX

5-Element Triband Beam (for 20, 15 and 10 meters)



The newest addition to our famous Thunderbird line of Triband antennas. The TH5DX offers outstanding 8.5 dB gain performance on 20, 15 and 10 meters. It features five elements on an 18 foot (5.5m) boom with three active elements on 15 and 20 meters and four active elements on 10 meters. The TH5DX also features separate air dielectric Hy-Q traps for each band. This allows the TH5DX to be set for the maximum F/B ratio and the minimum beam width possible for a Triband antenna of this size. Also standard on this antenna are Hy-Gain's unique Beta Match, rugged boom-to-mast bracket, taper swaged elements, and improved element compression clamps.

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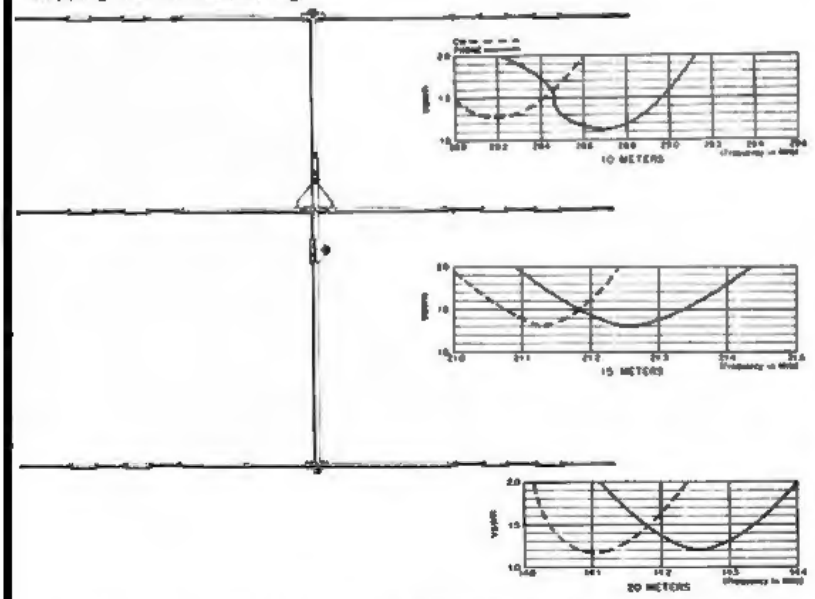
Shipping Wt: 50 lbs. (22.7 kg)



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Hy-Gain's Thunderbird Junior offers top performance on 20, 15 and 10 meters, and its compact design makes it ideal where space is a limiting factor. Featuring separate and matched air dielectric Hy-Q traps for each band, it feeds with 52 ohm coax, delivers maximum F/B ratio without compromise. The TH3JR has an SWR of less than 1.5:1 at resonance on all bands. All hardware is Iridite® treated to MIL specs. Hy-Gain ferrite balun BN-86 is recommended for use with the TH3JR.

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